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Reviewing Transportation Alternatives

Editor's Note

The editors of *Carolina Planning* are pleased to present the Spring 1991 issue. Our contributing authors discuss the nature of various transportation-related problems and they share their points of view about alternative solutions.

The perception is growing among planners and citizens that problems exist in the transportation systems that serve both urban and rural areas. Pollution and congestion are no longer abstract problems but plague our everyday lives. Transportation touches upon so many issues--land use, economic development, social equity, environmental pollution, safety, capital financing --that we cannot begin to address the topic comprehensively in one issue of the magazine. However, the composite message expressed by the contributed articles is clear: our society is faced with some difficult transportation problems that will not go away overnight, despite the concerted effort of planners and knowledgeable citizens. Even as North Carolina's congressmen cry out for the state's fair share of federal urban mass transit funding, let us not be fooled into believing that more money is the entire solution to the problem.

Solving our transportation problems may partly hinge upon changing some of the traditions that virtually define the American way of life. As the population continues to grow, our country seems less expansive. In the Triangle, for instance, three discrete municipalities, Raleigh, Durham and Chapel Hill, are growing spatially toward each other, prompting a renewed look at the advantages of a truly functional intercity transit network. The hallmarks of the American psyche and life style include expectations of abundant space and distance from others so that we can practice independence, individualism, and enjoy privacy. The American transportation system, heavily reliant on the private automobile, has allowed us not only to have these things, but also comfort, convenience, time savings and the social status associated with car ownership. We are reluctantly beginning to acknowledge that the costs of this system, so well ignored over the past several years, must now be addressed.

But with optimism, let us suggest that the next several decades are going to be an exciting, albeit difficult, time in the evolution of transportation systems within urban areas and between cities and regions. A favorite quotation from American history addresses the need for change. President Lincoln in 1862 said to members of Congress: "The occasion is piled high with difficulty and we must rise with the occasion. As our case is new, so we must think anew, and act anew. We must disentrall ourselves, and then we shall save our country." The emergency under which Lincoln gave this speech makes our current problems of transportation pale in comparison, but the message is transferable. During the 1990s, necessity will engender creativity, innovation and adaptation. But one additional hope, which I believe is shared by all members of the planning profession, is that with early and successful implementation of adaptive measures to keep our society mobile, our public debts under control, and our environment clean, we can avert crisis altogether.

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Cover Photographs: Courtesy of the North Carolina Collection, University of North Carolina Library at Chapel Hill. The photographs illustrate (beginning at the top and moving clockwise) a locomotive in Carrboro, circa 1910; the Wright brothers at Kitty Hawk; streetcars in Raleigh, circa 1931; and a toll gate in Watauga County, circa 1910.

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1963 Tarboro Plan Not Completely Shelved

The Fall 1990 issue of *Carolina Planning* was one of the best, with an excellent mix of articles. The watershed protection article was especially timely, since North Carolina recently adopted standards for water supply watersheds which must be adopted and enforced by local governments with watershed jurisdiction. The Nags Head article was of personal interest to me, since I once worked for the town as a planner with the state in the early 1960s and later as planning director. Also of special interest to me was the article on Tarboro ["Downtown Revitalization and Historic Preservation In Small Town America: A Case Study of Tarboro, North Carolina," page 50]. Tarboro was also one of "my towns" when I worked for the North Carolina Division of Community Planning in the 1960s. The 1963 plan for downtown Tarboro was completed while I worked with the town, however, all of the credit for the plan is due to Jerry Turner, AICP, now of Jerry Turner and Associates of Raleigh, N.C. and John Voorhees, now retired, of Raleigh, N.C.

Of significant concern to me, however, is the way the 1963 plan (actually published in September 1964) was summarily dismissed in the article. The article states that "In 1963, a plan for the redevelopment of downtown Tarboro called for the clearance of several blocks on either side of the commercial area for parking and future development. Fortunately this plan was shelved. The proposed demolitions would have leveled a large portion of the historic district and significant commercial buildings in lower downtown."

I'm not sure the 1963 plan was shelved, not all of it anyway. It is certainly alive and well in downtown Tarboro today. Except for the "Albemarle" and a different treatment of the waterfront (Jerry and John proposed a public boat slip-marina with possibly a restaurant) all of the more significant downtown projects mentioned in the article were first proposed in the 1963 plan. In fact, I'm amazed at the similarities, even to the use of the same type street tree (Darlington Oak), although Jerry and John favored a sand base with brick or pebbles whereas the later use of cast iron grates may be a better choice. The clincher, however, is the photograph [page 53] of the Courthouse Square completed in 1981, which is described as the "focal point of downtown Tarboro and best symbolizes its revitalization efforts." An artist's rendition of that square about eighteen years before it was constructed adorns the cover of the 1963 plan. At that time the courthouse was newly constructed on a street behind Main Street and faced the back end of a parking lot and the rear of the buildings on Main Street. The courthouse was a large, very attractive building that could not be seen as a whole because of its location close to the street. Thus its visibility became a major issue in the 1963 plan and the rest, as it is said, is history.

I'm not sure there is a moral to this story except that if the 1963 plan was indeed shelved, surely it planted some seeds in the right places. When my wife and I were first married, the City Directory canvasser thought she said I worked as a "planter" and asked what I planted. Maybe she should have said "Urban Planning Seeds."

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The editors welcome and encourage readers to write with questions and comments. Letters should be addressed to Editors, Carolina Planning, *The University of North Carolina at Chapel Hill, Campus Box # 3140, New East Building, Chapel Hill, NC 27599-3140.*

Artist's rendition of Courthouse Square in Tarboro, from the 1963 plan.

Preserving the Rustic Character of Roadscapes: Montgomery County's Rural/Rustic Roads Program

Glenn S. Orlin

Many rural areas at the suburban fringe are under pressure for development. Residents of these areas often advocate measures to preserve the rustic quality that make the areas so distinctive. The most common way is to establish agricultural zoning over the rural area or, alternatively, to zone it for a very low residential density, such as one home every twenty acres. A newer technique is to inaugurate a program to transfer development rights (TDR) from rural to urban locations.

While these measures act to prevent or retard suburban land conversion in rural districts, they do not address the perspective from which most people observe the countryside: the view from the road. A Sunday drive in the country is most memorable for the subtle impressions garnered from features immediate to the roadside--lines of elms along each edge, or perhaps a hedge, a stone wall, or a split-rail fence--as well as the road width and surface itself. Yet while zoning laws and regulations have been modified to preserve traditional rural uses, little has been done to prevent the destruction of the rustic roadscape by the typical application of standard highway design criteria, which would substantially widen and straighten many of the so-called *twisty-turnies*. Of course, these standards are set to accomplish safe driving conditions, and so a tension is created between the objectives of preserving the rustic environment and of promoting highway safety.

Glenn S. Orlin, P.E., AICP, is a legislative analyst for the Montgomery County (Maryland) Council, and was a member of the Rural Roads Task Force. He earned master's degrees in planning from the University of North Carolina at Chapel Hill and in civil engineering from N.C. State University, and is currently pursuing a Ph.D. in American civilization at George Washington University. For the past sixteen years he has been a planner and engineer with the North Carolina, Maryland, and Montgomery County Departments of Transportation.

Montgomery County, Maryland, a suburb of Washington, D.C., is attempting to deal with these conflicting goals. The county recently became the largest jurisdiction within Maryland, with over 700,000 residents and employment of about 400,000. It has adopted a raft of ordinances over the past twenty years to preserve its rural western and northeastern wedges, including agricultural zoning and a controversial TDR program. In 1987, these laws were supplemented with the adoption of the first Annual Growth Policy, which limited new development approvals to those subdivisions which met strict tests of traffic adequacy. Nevertheless, the pressures for urbanization led to several instances where an improvement deemed necessary by the Montgomery County Department of Transportation led to disagreement with local residents who felt the improvement was out of character with their environment. For example:

- A one-lane bridge on a back-country road was structurally deficient and proposed for replacement with a standard-width two-lane deck, despite the fact that the roadway approaching the bridge was only sixteen feet wide. The issue was further complicated because the bridge replacement program is partially federally funded, and so a standard cross-section was proposed to meet federal eligibility requirements. Local opposition led to the abandonment of the improvement as a capital project, and the bridge was shored up through a maintenance contract.
- In 1984, a program to pave the remaining sixty-four miles of gravel roads in the county was begun in order to phase out the ongoing expense of regrading these roads after washouts and of watering them during dry spells to control dust. Over the years, however, residents objected to some roads being paved, preferring the present state of the roads (and the attendant problems of dust and washouts) over the prospect of heavier traffic volume and higher speeds anticipated on "improved" roads. As a result, thirteen miles were exempted from the program,

Residents of Montgomery County objected to plans for paving some gravel roads, fearing that upgrading the road surface would lead to heavier traffic volume and higher speeds.

and the remaining road pavings were to be reviewed one-by-one by the county council and planning board before they could proceed.

In order for a certain subdivision to meet the county's traffic adequacy test, the planning board approved it on the condition that its developer fund the widening of the narrow roads through a scenic wooded glen and the replacement of a one-lane bridge with a standard two-lane structure over the stream running through the glen. This matter was complicated in that the proposed subdivision was over a mile away from the neighborhood of the glen, but would contribute heavily to traffic passing through it. The glen neighborhood bitterly fought the planning board's conditions, and they found an unlikely ally in the director of the Montgomery County Department of Transportation, who--after having been burned on similar issues (see above)--agreed that the improvements would be aesthetically damaging and stated that he would not approve construction permits for the widenings. An inter-agency crisis was averted only when consensus was reached on an alternative set of conditional improvements that avoided the glen entirely.

Appointment of a Rural Roads Task Force

Given the context of these and other similar issues, the county council appointed a Rural Roads Task Force in September 1989, with several responsibilities:

- To research experience with rustic and rural roads programs in other jurisdictions.
- To explore and evaluate concerns and benefits (such as heightened public interest in history and environment) for implementing a rural/rustic roads system.
- To develop a set of criteria for designating roads as rural or rustic.
- To develop a set of proposed regulations for maintenance and protection of those roads designated as rural or rustic.
- To develop a list of roads to be included in the rural/rustic roads network.
- To make suggestions for public information to be provided on the system of rural/rustic roads.

The task force had fourteen members: eight from civic, environmental, historical and agricultural organizations, and six from government staff, including the planning board, the Department of Transportation, the Agricultural Preservation Advisory Board, and the offices of Planning Policies and Economic Development. It reviewed ordinances and programs from all over the country but found, with few exceptions, that the intent of these ordinances and programs was to preserve and promote scenic highways --cross-state arterials which carry significant volumes of traffic. An exception was Wisconsin's Rustic Roads Program (billed as "a positive step backward") which, by 1988, had identified over fifty local access roads in thirty counties as rustic. Many of the guidelines in Montgomery County's proposed program were to be borrowed from the Wisconsin law, passed in 1973.

The task force met weekly for five months, hearing guest speakers, making several trips in the field, but mostly discussing and debating the many issues raised by its multifaceted charge. A final report was ultimately produced in early March, 1990. The issues and their resolution are described below.

What is a Rural/Rustic Road?

Probably the single most time consuming issue taken up by the task force was its first one: how to define the type of road to be preserved. Comparing notes after the several field trips, there was remarkable agreement as to which roads were

"special," but there was also tremendous difficulty in summarizing concisely the attributes that made them special. Finally, the group was able to list four qualities shared by each rural/rustic road:

1. Each is located in an area where natural, agricultural, or historic features predominate in the landscape and where land use goals and zoning are compatible with the rural/rustic character.
2. Each is a relatively low volume road intended for predominantly local use.
3. Each is narrow, without sidewalks, curbs or gutters.
4. Each satisfies at least one of the following:
   a. Has outstanding natural features along its borders, such as native vegetation, stands of trees, and stream valleys.
   b. Has an outstanding roadscape with vistas of farm fields and rural landscape.
   c. Enhances the interpretation of the county's history by providing access to historic resources, following historic alignments, and/or highlighting historic landscapes.

These four characteristics became the criteria by which the task force judged whether or not a road was rural/rustic; however, two more important distinctions were drawn. First, the group wanted to identify the most special roads, in order to grant them a higher degree of preservation in their current state. There were two means by which such "exceptional" roads could be designated: either by a higher degree of rusticity, or by a greater potential for impairment if improved or widened. The task force had great difficulty choosing between beauty and vulnerability, so it included both in its definition. As a result of this liberal definition, over half of the rural/rustic roads were deemed to be exceptional.

A second sub-classification was made between roads in the agricultural preserve, called *rural roads* and those in the low-density, non-residential wedges of the county, called *rustic roads*. The task force predicted (correctly) that there would be a different public response between restricting improvements in farm country, where traffic would conceivably always be low, versus limiting widenings in the two-acre-zoned residential wedge, where traffic was expected to increase with development. In the end, the task force applied the same guidelines for maintenance and improvements on both rural and rustic roads, but the general reaction to the program suggests that the two types of roads may well be treated differently once the program is codified. Once the criteria and sub-classifications were determined, the group was able to settle upon broad definitions for rural and rustic roads:

> A *rural road* is a road within the Agricultural Reserve or adjoining rural areas . . . which enhances the rural character of the area due to its particular configuration, alignment, scenic quality, landscaping, adjacent views, and historic interest, and which exemplifies the rural and agricultural landscape of [Montgomery] County.
>
> A *rustic road* is an old road, outside the Agricultural Reserve or adjoining rural areas, reminiscent of the county's past which has unusual beauty because of its setting in the environment through which it passes.

The task force identified a total of 81 roads as rural or rustic; about 70 percent of the total were rural roads. The 143 miles of designated roadways represented about 7 percent of the county's road mileage. A breakdown of these roads follows:

	Exceptional (%)	*Other (%)*	*Total*
Rural	30 (53%)	27 (47%)	57
Rustic	12 (50%)	12 (50%)	24
Total	42 (52%)	39 (48%)	81

Just as interesting were the roads not selected. Most of the state highways in the Agricultural Reserve are clearly quite scenic, but just as certainly are not the back-country, winding roads for which the task force members were most concerned. The group recognized that the traffic-carrying function and the speed limit (40 mph and higher) of these highways mandated that potential improvements for capacity and safety take precedence over preserving the rustic quality of their roadscapes, although it urged that such improvements be done as sensitively as possible. In general, roads that were functionally classified in county master plans as arterials or higher were not designated as rural or rustic roads.

Guidelines for Maintenance and Improvement

How rural and rustic roads can be maintained and improved was the key issue that was debated. Here the trade-offs among the goals to improve safety, increase capacity, reduce cost, and enhance rustic character were faced most starkly. Most maintenance practices do not affect the roadscape, but some were spotlighted. Tree cutting is usually done with a "bushhog," a machine that will rapidly cut a consistent swath through thick vegetation. Instead, the task force called for selective pruning, following good forestry and landscaping practices; however, this will add substantially to the cost of right-of-way maintenance. Similarly, the group recommended limiting the use of herbicides to control growth along the right-of-way and urged selective mowing to preserve wildflowers.

The guidelines governing improvements were the most sweeping. On non-exceptional rural or rustic roads the county could not alter the width, alignment or road surface unless necessary to provide adequate safety or drainage or to reduce maintenance problems; even these alterations could not be done if they violated the rural/rustic features which made the road eligible for inclusion in the program in the first place. On these roads, therefore, rustic quality took precedence over capacity and stood on equal footing with safety and cost

concerns. Bridge replacement or rehabilitation could be done only in a design and with materials which preserved and enhanced the rustic appearance of the roadway. The guidelines were even more stringent on exceptional roads, where alterations could be made only to provide a lay-by for farm equipment or for a scenic opportunity, and where bridge decks generally could not be widened beyond their current width.

The design of elements adjacent to the roadway also would be tightly controlled. Shoulders, if necessary, would be narrow. When a new guardrail is installed, it would be made of a material that enhances the rustic appearance (such as corten steel, which naturally rusts to a brown hue while still retaining its tensile quality). Street lights and traffic signals would also be designed so as not to be entirely out of place in a rural or rustic environment.

The most hotly debated guideline essentially put the program in direct competition with the county's adequate public facilities ordinance, which requires that transportation capacity be provided in advance of new development. This was a signal issue in the low-density residential wedge where, a few months earlier, the controversy over the bridge and road widenings in the glen took place. As adopted by the task force, this guideline was a clear statement that preserving rustic quality was more important than providing adequate capacity:

> Subdivision and/or building permit approvals should not require road improvements which would violate the Rural/Rustic Road Program guidelines. The guidelines cannot be used as a reason for denying or postponing approval of a subdivision or building permit.

This guideline is not an absolute exemption, but instead may require the subdivider to take different measures than what would normally be the case. For example, an alternative to widening a rural or rustic road might be to construct a parallel road or to initiate a ridesharing program. Nevertheless, in many cases application of this guideline will lead to an increase in traffic congestion.

Public Participation and Program Changes

To oversee the Rural/Rustic Roads Program, the Task Force urged the establishment of a Citizens' Advisory Committee (CAC) that would meet periodically to review how the program was being implemented by the planning board (in its approval of subdivisions) and the department of transportation (in its design of capital improvements and its regular maintenance). The CAC would focus attention on rural and rustic roads through a public information effort which would include signing and marking the roads, identifying them on maps and promoting them in county publications.

The CAC likely would also play a role in future additions and deletions to the program. Although a proposed change could be submitted by any individual or group, it would first be evaluated by the CAC to assess its conformance to the definition and criteria of rural and rustic roads. The CAC would make its recommendation to the county government, which would then take the proposal through a decision process similar to that of a master plan amendment: review and decision by the planning board, county executive, and county council, successively.

Reaction

The public response to the task force's recommendations has been generally positive, especially regarding the rural roads. Several individuals and groups petitioned the county executive and council to add their roads to the program. However, some groups--most notably the planning board--balked over the guideline that some rustic roads (where traffic levels are higher) cannot be improved for safety to the level accepted by the engineering profession. Furthermore, some planners have noted that, by accepting the current state of these roads as the ultimate condition, the planned correlation between zoning and road capacity would be out of balance.

Acknowledging these cautions, the county council informally endorsed the task force's recommendations in separate letters to the county executive and planning board. It urged that legislation be drafted to formalize the program, but that in the meantime the county should adhere as much as possible to the task force's guidelines, so as not to lose further ground. At this writing, a draft law and executive regulation is being prepared for submission to the council and for public hearing.

Conclusion

Montgomery County's proposed Rural/Rustic Roads Program places rustic character squarely among the factors considered in road improvement decisions, along with safety, capacity and cost. Although some compromises are sure to be made before the program is officially adopted, the final law and regulation will likely make a substantial impact. The program's potential strength lies in its specifying not only the roads to be preserved, but also in the particular guidelines to be followed in the maintenance and improvement of these roads and in the establishment of a citizen watchdog group. The likely result will be roads that will be customized to meet both safety and aesthetic considerations. □

References

Montgomery County, Md., *Proposal for a Rural/Rustic Roads Program*, March 1990.

Wisconsin Department of Transportation, *Wisconsin's Rustic Roads: A Positive Step Backward*, January 1988.

I-40 Opens! . . . Now What?
A Case Study in Pro-Active Regional Planning

David T. Hartgen
Nancy Roy

The processes associated with the design and construction of major highways can cause divisive controversies with negative outcomes. These controversies arise from the anticipated impacts of proposed alternative highway locations before actual construction; however, much less attention is paid to the effects, predicted and unanticipated, of new roads after ribbons are cut. Once construction decisions are made, the short time period during construction and shortly after the grand opening provides a unique "window of opportunity" for communities to take positive actions to reap the full benefits of the highway while reducing its negative effects (Figure 1).

To those communities willing to adapt to their changing environment, action taken during this particular time period can effectively produce positive benefits. There is no uncertainty about some of the highway's direct effects, such as redistribution of traffic volumes; however, indirect impacts, such as economic development along highway interchanges will not be felt for some time and are therefore amenable to change.

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The North Carolina Division of Community Assistance, in cooperation with local governments, other state agencies, and the private sector, has initiated a study of the newest portion of Interstate 40, a four-lane divided limited-access road running from Raleigh to Wilmington, North Carolina. The goals of the study are to identify the major impacts of the highway corridor, as constructed and opened; and to develop actions that governments and the private sector can take to reduce the highway's negative impacts and maximize its positive ones.

A Profile of the I-40 Corridor

This 120-mile stretch of Interstate 40, under discussion and planning for almost twenty years, was finally opened to

Figure 1

The "Window of Opportunity" after Highway Construction

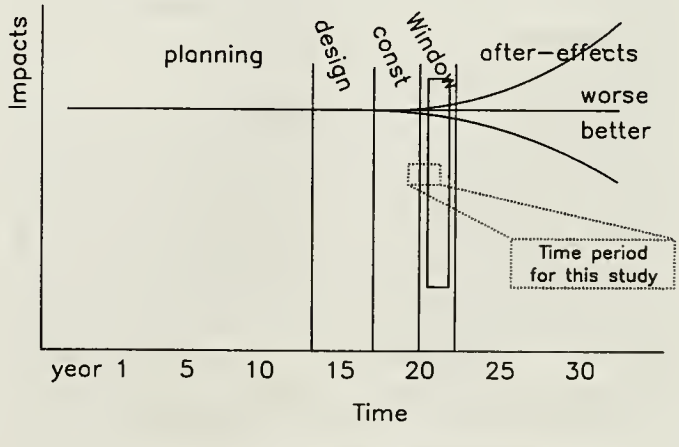
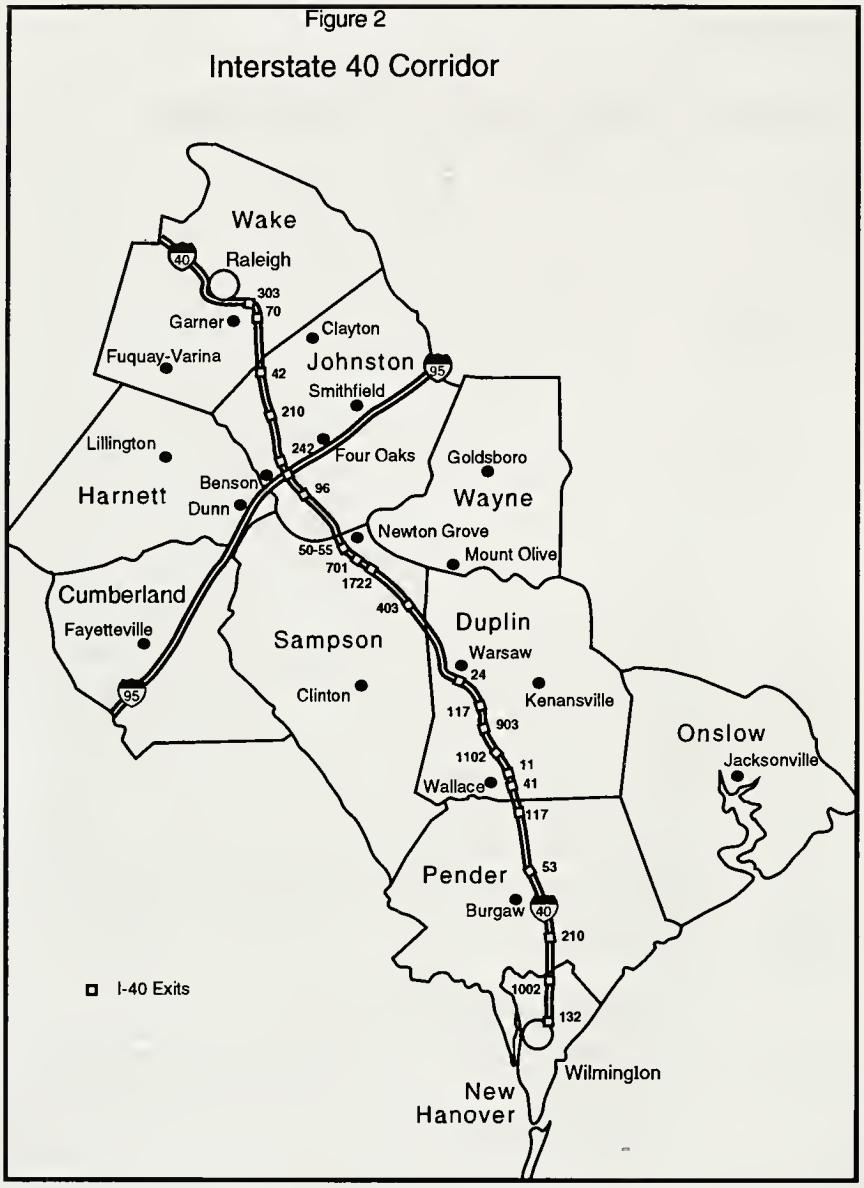


Figure 2

Interstate 40 Corridor



traffic in June 1990 (Figure 2). It represents the last major component of interstate work to be done in North Carolina and in the nation. Interstate 40 is one of the longest highways in the country, running 2,455 miles from the North Carolina coast to Barstow, California.

Interstate 40 now connects the formerly isolated port city of Wilmington to the interstate system. The I-40 corridor is essentially rural in character, interspersed with small towns, agricultural communities and farming districts. Income levels and general accessibility in the central portion of the corridor are lower, compared with the corridor's ends. Interstate 40 has increased both local accessibility and regional interconnectedness. I-40 diverts truck and tourist traffic from parallel routes, reducing traffic congestion in nearby communities, but businesses relying on the diverted traffic may also be hurt. However, reduced air pollution and truck noise, particularly at night, are some of the positive effects.

In the future, roads feeding the interstate may increase in traffic, and new development surrounding the interchanges will result. Recreational business is likely to benefit, since I-40 has the effect of opening up the central coast of the Carolinas, considerably reducing the travel time to Carolina beaches from the inland cities of Raleigh and the upper Piedmont. The resulting increase in the tourist trade will bring congestion to beach and coastal communities. Beachfront property prices may also rise. Business may be diverted from beach-related centers south of this area, particularly the Grand Strand region of South Carolina, and from the north, particularly the Outer Banks of northern North Carolina's seashore and southern Virginia. Essentially, the effect of the highway may be to "smooth out" the beach-front property development to raise economic levels and accessibility in the central part of the North Carolina coast, thereby producing a more uniform economic base along the coast of Virginia and the Carolinas.

Military access will improve, benefitting the major military installations at Jacksonville, Fayetteville, Cherry Point, and Goldsboro. As truck traffic increases, the Port of Wilmington may become more attractive to European trade than other ports, particularly for Carolina-produced commodities. Citizens along the corridor will now find themselves closer to area services, hospitals, community colleges, and shopping, expanding the markets for these and other regionally based activities. These residents will also find themselves closer in travel time to major metropolitan areas, thus increasing the attractiveness of those regions for jobs. Moreover, the corridor communities will become more attractive residential sites for people presently living in the urban areas.

Pre-Study Phase

In August 1989, the North Carolina Division of Community Assistance (NCDCA) began to survey interest in conducting a study of the Interstate's economic impact. The effort was considered timely since local officials and the media had been predicting an "economic boom" and called the Interstate's completion "the single most important factor to affect development in southeastern NC for decades." Despite these claims and rising expectations, no objective research to quantify the expected development had been conducted. With the cost of the 120-mile stretch of highway at $314 million, it seemed appropriate that there would be

support for a study to determine possible economic impacts and identify strategies to use in the corridor.

An important factor to be considered was the rural, predominantly agricultural nature of the corridor. Excluding the corridor starting point at Raleigh, and terminus at Wilmington, only two communities out of the thirty have populations over 5,000 and a majority have less than 1,000. To initiate this discussion, NCDCA organized a kick-off dinner sponsored by a large utility company. Over 100 persons representing 30 communities attended the October 1989 event. Speakers presented visions of what the study could offer and described how it would be directed by the community and results-oriented. Subsequently, many local governments requested and received special presentations to their governing boards. Eventually, 38 communities supported the study and agreed to participate in corridor-wide strategic planning. An I-40 Steering Committee was formed to guide this study.

While gathering community support and involvement, NCDCA was also discussing the study design with the University of North Carolina at Charlotte. Since local government fees could only be expected to generate $25,000 against an estimated total cost of over $100,000, a draft of the study design was presented to potential funding sources. The corporate and agency sponsors took great interest in the study and made several suggestions for revisions to the design to ensure the results would be usable by smaller communities.

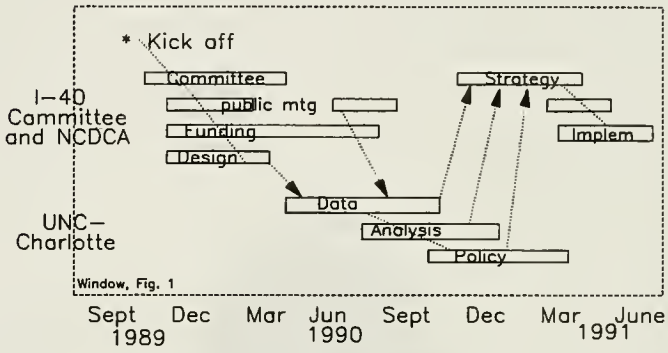
Funding

Along with reviewing and refining the study design, fundraising became a major focus for the steering committee. Telephone and electric companies, the North Carolina Rural Economic Development Center, and the North Carolina Department of Transportation responded quickly with generous commitments. The committee asked communities to contribute at a rate of three cents per capita (with a minimum payment of $150 and a cap of $3,000), to help fund the study. As the committee moved its meeting place to several small towns along the corridor, the public became interested, and citizen attendance increased. Positive media coverage resulted in numerous small, but extremely important contributions from financial institutions, rural electric membership co-ops, regional councils of government, tourism authorities and chambers of commerce. The challenging task of raising sufficient funds presented an opportunity for steering committee members representing ten counties to work together on a cooperative basis, as they will have to do to implement study findings.

The study is structured into two major efforts, one community-oriented, the other technically-oriented (Figure 3). The NCDCA, as the coordinating agency, has overall responsibility and leads the community involvement process. UNC-Charlotte, under contract to NCDCA, has primary responsibility for technical elements of the study and provides assistance to NCDCA on the community involvement portion. The study consisted of development of the corridor-wide strategic plan addressing issues common to all communities as well as follow-up projects to address needs of individual communities. With an approved study design, the university began data collection in May 1990. This allowed for the steering committee to be briefed on the strategic planning process and to discuss the general economic climate of the region.

Figure 3

Proactive Planning Schedule



The overall goal of the technical work is to provide a sound base for communities to develop strategic plans that fit well with corridor objectives. A fundamental constraint of the technical work is that the time to plan, organize, gather and analyze data, make decisions and take action is short, two years at most. Therefore, a great deal of information needs to be compiled, organized and presented rapidly, so that development and implementation of strategic plans can occur *before* negative impacts result. This constrains the technical effort to a series of quick work sessions, each with preliminary and final findings. Preliminary findings are made available in rapid form for early discussion, and are followed up later by more detailed technical reports.

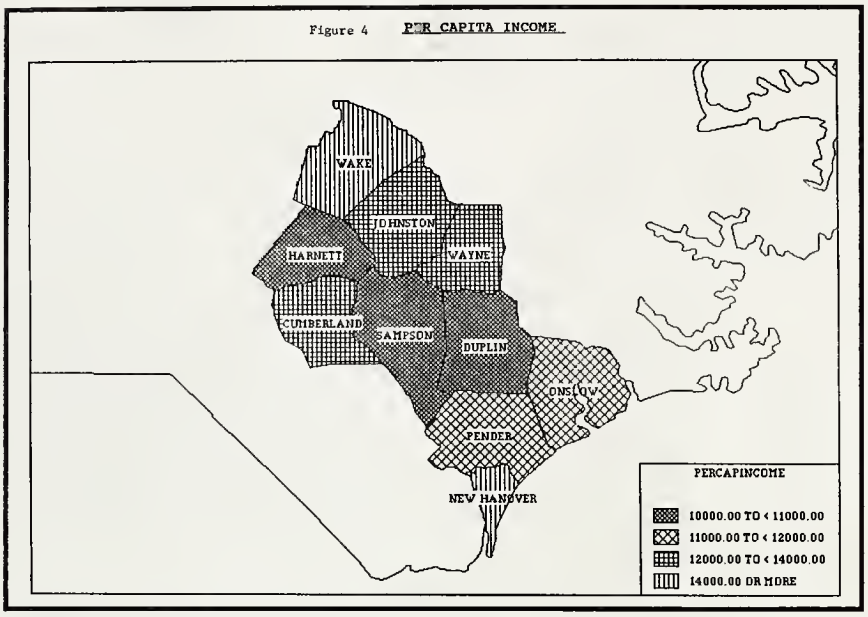
Gathering Information

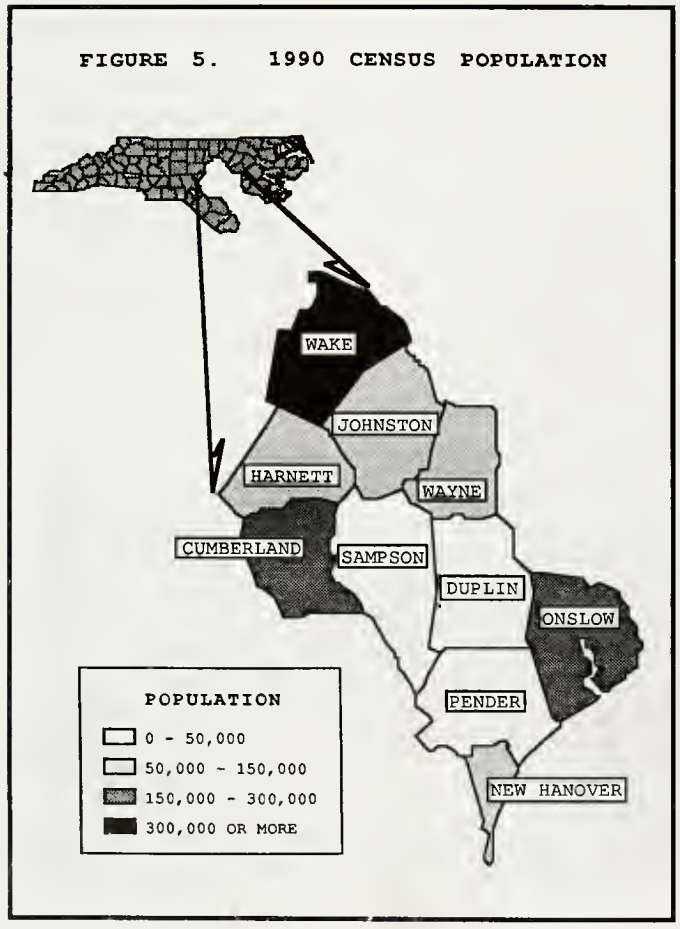
County and Town Statistics

An extensive database containing about 400 economic and demographic variables describing the region is being prepared. Information consists primarily of census and similar items; community reports on education, health, and budgets; transportation statistics on mileage and services; labor force and wages by major SIC category; and population statistics by age and ethnicity. Where possible, several years of data are being compiled so that trends may be developed. The study is not waiting for final results of the 1990 census, although those statistics are available on a preliminary basis. Figures 4 and 5 show examples.

A modern transportation-oriented geographic information system, TRANSCAD, is being used as the computer data

base to store and display this information. TRANSCAD provides the ability to mix, match and combine a variety of statistics spatially and provides a unique environment to better understand complex relationships. It provides a full range of output graphics and transportation modeling features as well.





Traffic Data

Working with statistics provided by the North Carolina Department of Transportation, a complete traffic picture for the region is being developed using the TRANSCAD data base. Statistics are available on average daily traffic and peak hour loads, truck/tractor movements, speeds and capacities, as well as plans for future road improvements. Traffic counts collected since the opening of I-40 are being used to develop estimates of the diversion effect from major parallel streets and the increased traffic on major feeder facilities.

Interchange Growth

In order to better understand how growth at interchanges along I-40 is likely to develop, UNC-Charlotte researchers reviewed past growth at interstate intersections in rural North Carolina. They visited 103 interchanges and identified their growth patterns. Relating these patterns to availability of infrastructure, traffic, zoning patterns, visibility, sewer and water, and other regional and site-based parameters, the researchers developed a series of simple models of interchange growth. They then applied these models to characteristics of the I-40 interchanges to estimate growth potential.

Business and Citizen Surveys

UNC-Charlotte surveyed a representative sample of businesses along the I-40 corridor to determine their characteristics and to gauge opinion about improvements that communities should make to benefit from I-40. The TRANSCAD data system displays the geographic relationships between respondents' opinions and their reliance on I-40. Similarly, citizens completed a short questionnaire focusing on their opinions about potential local government strategies. This data was also displayed using the TRANSCAD system. As this information comes together, analysis is being prepared on a variety of substantive questions.

Analysis Phase

Traffic Forecasts

Using models that relate traffic to population and economic growth and activity, analysts are forecasting traffic on each section of I-40 and on major parallel and feeder routes. Adjustments are being made for route diversions or traffic reductions as a result of the Interstate.

Economic Activity at Exits

Researchers are analyzing exit characteristics and traffic forecasts to estimate the already increasing economic activity at each exit on I-40. For each exit, the development potential for new motels, sit-down and fast-food restaurants, gas stations, truck stops, residential development, and other services are being modelled. Most exits presently do not have utility service. Figure 6

shows the relative twenty-year development pressure at I-40 interchanges using these procedures.

Economic Forecasts

Economic forecasts, being prepared with a location quotient economic forecasting model, will identify those individual counties which are likely to enjoy employment growth as a result of I-40. This growth is being compared with growth rates of other groups of counties in North Carolina and South Carolina that have not had recent major improvements in accessibility.

Growth Points

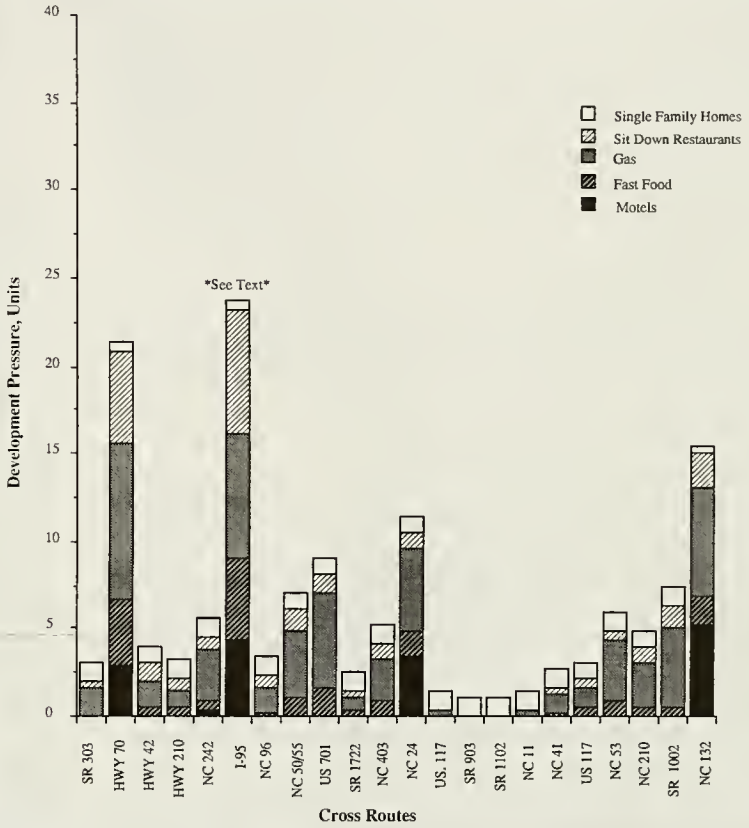
Using a method known as successive overlays, a number of key locations in the corridor are being analyzed for their overall growth potential for retail and industrial sites. This method involves assessing each point for increases in accessibility, interchange development, traffic, population, employment, and spending power.

Port of Wilmington

The team is assessing the extent of changes in trade through the Port of Wilmington as a result of the increased I-40 trade. Accounting for recent events in Eastern Europe, the study will also look briefly at the effects of increased traffic to the Port of Wilmington, particularly the effects of truck and container traffic on the street circulation system of the city.

Figure 6

20 Year Development Pressure at I-40 Exits - 1989 Traffic Levels



Community Participation

Community involvement is an integral part of the study and is largely responsible for its success. Community participation in the study is being ensured through a number of mechanisms.

I-40 Steering Committee

Early in the study, county and community representatives in the corridor were asked to participate in study design and planning and to join a steering committee. This committee consists of elected officials, economic development and chamber of commerce directors, private sector individuals, and government agency representatives of the region. The I-40 Steering Committee meets periodically to review study progress, provide guidance, and inform the general public.

Public Forums

Since the data collection phase provided a break over the summer months of 1990, the committee was faced with the possibility that the project might lose momentum. It was decided that this would be an excellent time to encourage community input. Public forums, sponsored by local chambers of commerce, were scheduled during July and August at four locations along the corridor. Agricultural groups, the general public and merchants representing a variety of business interests were invited. Over 300 persons attended the forums and participated in a structured agenda aimed at uncovering issues as well as prospective strategies. Excellent media coverage helped to keep the project before the public and to emphasize the fact that the steering committee would use the forum information when their planning meetings reconvened in the fall.

Strategic Actions

As the study proceeds, task forces are being organized to review information for each sub-area of the entire corridor, and to respond to suggestions concerning strategies. These groups will focus on six key areas:

- Education
- Infrastructure
- Recreation and Tourism
- Community Services
- Economic Development
- Environment and Planning

The strategy development process involves both plans for various sub-areas of the corridor and corridor-wide strategies to be implemented by groups of counties working together. There will be overall steering committee review of the separate task force strategy meetings, since many issues are interrelated. As the project enters the policy phase, the study will produce a well-documented corridor development plan for the thirty-five communities in the region. Secondly, through the planning process, participants will develop a history of working together and gain understanding that the highway linkages can lead to corridor-wide benefits for all communities involved.

Results of this study should be available in September, 1991. While it is premature to identify specific actions appropriate for a variety of circumstances in the corridor, it may be useful at this point to list some of the items being considered.

Transportation Improvements

- Widen selected major routes that feed I-40 to four lanes.
- Accelerate completion of an urban loop around Wilmington.
- Upgrade unpaved roads to paved road status.
- Reconfigure truck route access through communities.

Interchange Development

- Provide sewer and/or water services to selected interchanges.
- Carefully zone the area around each interchange and between an interchange and its nearby towns for appropriate development.
- Encourage businesses to locate closer to I-40.

Signs and Advertising

- Pass sign ordinances limiting the number and size of signs visible from I-40. Establish corridor standards for sign appearance and size.

Development and Community Services

- Re-sign directions to hospital and community colleges.
- Advertise community college and training services in new markets.
- Coordinate real estate listings across the corridor.
- Establish a corridor association of chambers of commerce.
- Expand or merge school districts.
- Advertise the corridor in distant cities.
- Restructure the economic recruitment process to take advantage of the favorable I-40 business climate.
- Develop and maintain a database of land parcels for industry recruitment purposes.
- Assist existing businesses to attract new employees.
- Establish a corridor-wide planning district.
- Establish corridor-wide zoning ordinances and a cooperative zoning treatment of grandfathered parcels.

Cooperative Corridor-Wide Strategies

- Promote complimentary advertising of community services across a number of towns.
- Enact signing and zoning ordinances.
- Establish an I-40 business association.
- Prepare a long-range corridor development plan.

Summary

In the window of opportunity provided by the opening of a new highway, cooperative strategic planning is particularly charged. Efforts must be undertaken rapidly, data collected and compiled accurately and quickly, decisions made, and actions implemented. Numerous constraints and threats operate to undermine the probable success of the effort. Communities may not have available funds. They may not work well together. They may view each other as competitors rather than as cooperators or may simply not agree on what is best for the region. The narrowness of the time window increases the pressure.

On the other hand, the benefits of a successful cooperative effort are substantial. *Communities that can work together to find ways to participate in developing a positive future are in a better position to ensure that their plan succeeds.* The singular opportunity to direct the benefits derived from the accessibility provided by Interstate 40 may substantially affect the corridor for many years to come. While the stakes are high and the risks are great, there is no better alternative than to leverage the opportunities which have been provided. □

Acknowledgements

This material is based upon work supported in whole or in part by the I-40 Steering Committee and numerous private and public project sponsors. Major contributors to the study include the North Carolina Rural Economic Development Center, the North Carolina Department of Transportation and the U.S. Economic Development Agency. The project is managed by the North Carolina Division of Community Assistance. Any opinions, findings, conclusions or recommendations expressed in this article are those of the authors and do not necessarily reflect the views and policies of the project sponsors.

A Global Air Cargo-Industrial Complex for North Carolina

John D. Kasarda

Transportation accessibility and changes in transportation technology have always been paramount to community economic development. America's first great commercial centers developed around seaports. Next came riverine and canal-linked cities that formed the backbone of America's industrial revolution. Railroads fostered the third wave of state and local economic development, opening up America's land-locked interior to manufacturing and trade. Major centers of goods processing and distribution emerged at rail hubs, generating massive numbers of jobs and commercial activity at these terminal and break-in-bulk points. In fact, the contemporary South's largest commercial center, Atlanta, developed as a railway hub and was initially known as Terminus.

The fourth wave of economic development was spawned by highways and the shift to cars and trucks to move people and goods. With the introduction of freeways, beltways, expressways and interstate highways, massive deconcentration of economic activity commenced. Major suburban commercial centers developed and previously inaccessible rural communities along the interstates had new economic life pumped into them, while those that remained isolated stagnated.

We are now entering the fifth, and perhaps most opportune, economic era where international markets and international sourcing will play increasingly dominant roles, and speed will become a critical competitive factor. This new era is being ushered in by three irreversible forces of immense significance: the globalization of economic transactions; fundamental changes in manufacturing methods from producing large, uniform batches to making customized goods on short notice and to just-in-time processes that substantially cut production and delivery cycles to minimize inventory costs; and a growing requirement of business to ship products by air rather than by surface. The combined thrust of these interacting forces is creating an entirely new economy where aviation and airports will ultimately supplant seaports, rail and highway systems as the primary job and wealth generators for states and localities.

North Carolina's ability to maximize indigenous commercial growth, expand exports, and attract major investment from around the country and the world will require an understanding of the new global economy and the forces creating it. Competitive success will also require vision and pro-action regarding the pivotal role aviation will play.

After briefly describing the forces shaping the new economy, this article describes the concept of a global air cargo-industrial complex that would exploit these forces to provide North Carolina with an edge in capturing a disproportionate share of the nation's future economic development.

Macro-Forces Creating The New Economy

Globalization

Since the early 1980s there has been a marked growth and integration of world markets, resulting in huge volumes of raw materials, components and finished products flowing across international borders every day. U.S. exports and imports more than doubled during the 1980s, reaching $1.3 trillion annually by 1990, while total world trade surged to $4 trillion per year. Investment abroad by America's multinational corporations likewise mushroomed to $1.3 trillion in 1990.

The growing interdependence of world markets is reflected not only in terms of international trade and multina-

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tional corporate activities, but also in international information flows and financial transactions. For example, between 1977 and 1987, international telephone calls to and from the U.S. (the vast majority for business purposes) rose by well over 1,000 percent, from 300 million minutes to nearly 5 billion minutes. At the same time, Japanese, German, and Dutch banks have become the chief underwriters of U.S. Treasury bonds and financiers of massive commercial projects in the U.S. and around the world. By 1988, the daily volume of foreign exchange trading amounted to $600 billion.

Perhaps nowhere is the new global economy more concretely manifested than in the dramatic rise of component sourcing. Nearly a decade ago, Ford Motor Company introduced the world car, assembled in Detroit from parts produced on each of the major continents. Today, global sourcing is commonplace, with advanced telecommunications and transportation technologies allowing wide geographic dispersion of component manufacturing sites and places of final assembly, depending upon raw material availability, labor costs, and markets. In this regard, a personal computer produced at IBM's Research Triangle Park facility is likely to be assembled from integrated circuits imported from Japan, a power supply unit from Singapore, microprocessors from Korea, disk drives from Malaysia, and a glass screen from Taiwan.

Because of North Carolina's strategic location at the center of the East Coast, its excellent interstate highways, rail lines, water ports, major research universities and attractive business climate, foreign companies are showing increasing interest in siting their export-oriented production facilities in the state, making North Carolina a leader in attracting manufacturing and direct foreign investment. Concurrently, the state's home-grown businesses are becoming increasingly involved in exporting a wide variety of products, including such disparate exports as blueberries, textile machinery and air fresheners. Concord Farms of Concord, North Carolina sells ducks to the Chinese. With new international agreements substantially reducing trade barriers likely to be negotiated during the early 1990s, export opportunities for manufactured goods and agricultural products should skyrocket.

We are at the dawn of a new economic era in which global sourcing, marketing, and exporting will be critical to the future competitiveness and prosperity of North Carolina's businesses. State leadership must act quickly and decisively to position North Carolina as a hub in this rapidly expanding global network.

Just-In-Time Production and Delivery

The shift to a global economy, while generating a phenomenal expansion of market opportunities, has also brought in a multitude of new international competitors, placing growing pressure on U.S. firms to reduce costs and increase productive efficiency. In the manufacturing arena, global sourcing has been one mechanism frequently employed to reduce costs. Another is a major innovation in production, distribution, and inventory control methods known as just-in-time. Under this system, all elements in the value chain, from raw material acquisition to delivered finished products, are synchronized to substantially cut production and delivery times and virtually eliminate inventories.

The economic logic underlying just-in-time operations is that inventory carrying costs are becoming a greater percentage of the total cost of production and distribution of many products. According to Business International Corporation, the proportion of total distribution costs that goes to maintaining inventory has doubled during the past decade, with timing of delivery becoming a crucial factor. Early delivery raises warehousing and inventory expenses, while late delivery results in costly interruptions in production schedules and missed sales opportunities. The new economy will place a premium on manufacturers acquiring materials and producing and delivering finished products in a highly synchronized fashion, precisely as needed.

The necessary transition to just-in-time (JIT) systems is also being validated by marketing research which shows that consumer tastes and product demands are changing much more swiftly today than was the case in prior decades. Indications are that such shifts will accelerate in the decades ahead, resulting in situations where products that are popular one month may become obsolete the next. Thus, the current era when manufacturers can produce large batches of standardized goods for relatively stable markets will inexorably give way to an accelerated era of customized production on short notice for quick response to changing demand. Just-in-time systems are ideally suited to this new economic environment where flexibility and speed will be imperative to competitive success.

The Coming Aviation Era

With international transactions, production flexibility, and speed characterizing the new economy, it is certain that air cargo will play an increasingly important role. No other means of transit is better equipped to meet the economic realities of the coming era, where global sourcing and selling and just-in-time logistics will require that producers receive and ship smaller quantities more frequently and quickly over long distances. Air freight already accounts for more than one-third of the value of U.S. products exported, a percentage that will surely rise in the years ahead. International air cargo shipments are projected to grow at least 7 percent annually during the 1990s, with the booming Pacific Rim routes generating double-digit annual growth rates throughout the decade.

Much of the cargo will continue to go in the bellies of passenger planes, with some Boeing 747s carrying as much as 35 tons of cargo along with their passenger loads. So important has international aviation become that the Boeing Corporation alone has some 2,000 aircraft on back order,

including over 300 747s and 200 767s. Yet, because air cargo is growing so much faster than passenger transit, hundreds of passenger planes are being converted to all-cargo carriers, including numerous 747s. Likewise, new orders for all-cargo aircraft, known as freighters, are rapidly rising. During the 1990s, Boeing expects to sell at least 125 of the 747-400 freighters, the largest U.S.-produced airplane with a cargo capacity well over 100 tons.

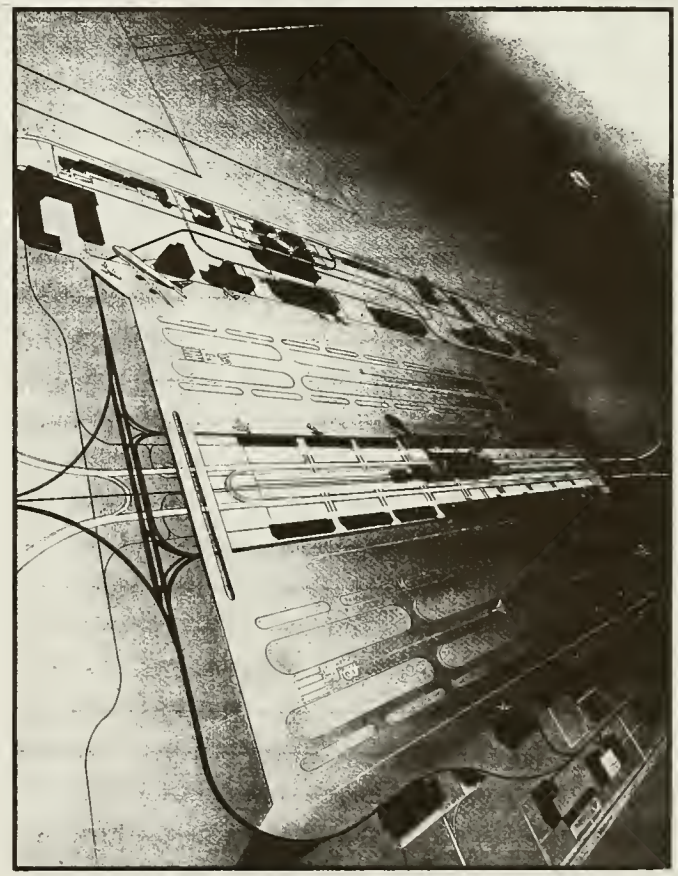
In prior economic eras, when speed of delivery and production flexibility were less crucial to competitive success, air freight was considered a luxury. It was confined primarily to small, lightweight, compact products with high value-to-weight, or to items needed on an emergency basis at a distant site. Today, essentially anything that can be loaded onto a large aircraft is routinely shipped internationally by air: automobiles, heavy machinery, high tech equipment, textiles, furniture, pharmaceuticals, live cattle, bulk seafood, poultry and agricultural products. When Japan reduced its tariff on American cigarettes by 26 percent in May 1987, 10 million pounds of U.S.-made cigarettes were air freighted to Japan in the following four months. Moreover, air freight is creating entirely new industries, such as the shipment of fresh cut flowers and other highly perishable goods for delivery to distant markets within hours.

The next generation of freighters will be similar to the world's largest aircraft, the Soviet Antonov 225, which was the darling of last year's Paris Air Show. This ocean vessel-size cargo plane has a wingspan of 100 yards and a landing gear consisting of 32 wheels. It can carry a payload of 250 tons thousands of miles. Development is beginning on hypersonic planes that will be able to carry products from North Carolina to Europe in less than two hours and to the Pacific Rim in less than three hours.

It is not unrealistic to suggest that within 25 years advances in aviation will place North Carolina's businesses within three hours of virtually any other part of the world, providing same-day global access to over 8 billion potential consumers. North Carolina must plan now for these and other inevitable technological advances that will usher in the Fast Century, in which speed will separate global business winners from losers.

Looking more immediately to the 1990s, global market growth potential is also immense. Most of that growth will be in the Pacific Rim, a $4 trillion market expanding at $5 billion dollars a week. Nearly two-thirds of the world's population lives in Asia, which contains the fastest growing economies, most of which are growing at real rates two to six times that of Europe and the United States. Rapid increases in the income level and purchasing power of Asian consumers led *Fortune* magazine to produce a special fall 1990 issue solely on Asia, dubbing it "Mega-Market of the 1990s." All forecasts project U.S. trade with Asia growing much faster than trade with any other region of the world.

Unfortunately, North Carolina is on the wrong side of the country to take maximum advantage of trade with the boom-

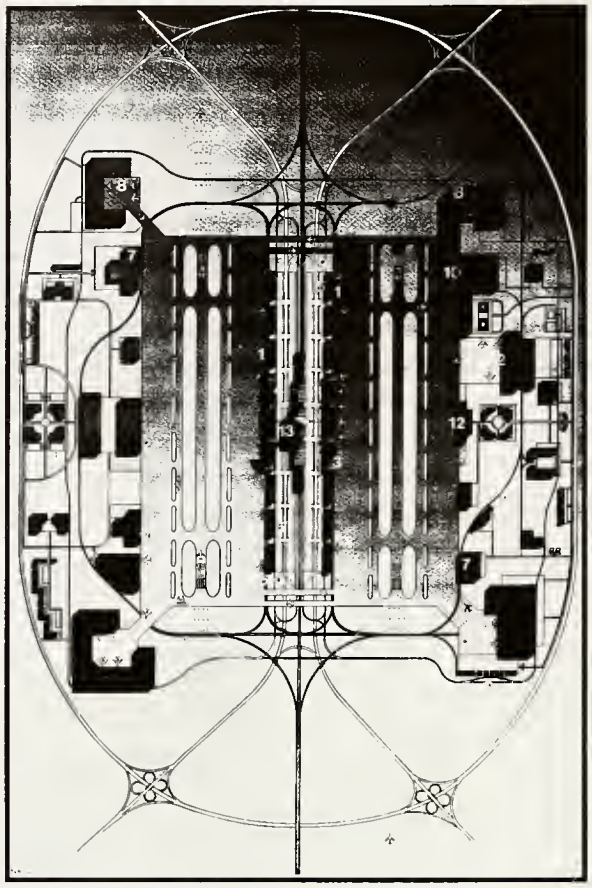


Top: The global air cargo-industrial complex would be linked to other cities in the region by a network of roadways and rail systems.

Bottom: View of the air cargo-industrial complex from a pilot's perspective.

ing Pacific Rim economies. The West Coast states have substantially better geographic accessibility and significant temporal advantage, since most exports and imports of East Coast businesses to and from Asia are currently shipped by truck or train across the country, delaying delivery by four to seven days. Air cargo essentially levels the playing field, by cutting the shipping-time disadvantage to only three hours, which is the time difference in landing a 747-400 freighter from Seoul or Tokyo at a North Carolina airport versus a California airport. To be competitive in the Fast Century, many East Coast companies wishing to do business in the Pacific Rim will have no other option but air freight to be competitive.

How valuable is an air route to the Pacific Rim? Houston officials, in their recent bid to obtain nonstop service to Japan, had a study commissioned that showed that the route would bring in half a billion dollars a year in increased trade and tourism to the Houston area. Similar testimony is provided by scholarly research and reports from around the country that document the growing importance of international airline accessibility for state and local economic development.



This diagram illustrates how truck, rail, and air freight systems move goods into and out of the air cargo-industrial complex. People mover systems, such as monorail and light rail, would transport people to and around the complex from local and regional originations.

With air freight becoming an integral part of a new economy based on international sourcing and sales, just-in-time production and inventory systems, and speed of delivery, these forces can be brought together in the form of a global air cargo-industrial complex that would provide North Carolina's economy with a propitious jumpstart into the Fast Century.

The Complex

The proposed facility is not an air cargo airport, but a computer-age industrial complex in which aviation will play a pivotal role. The complex will integrate just-in-time (JIT) manufacturing systems with air freight systems, both spatially and operationally, such that the two systems function as a synergistic unit. Instead of having runways and air cargo facilities with land adjacent to them developed as manufacturing sites, JIT plants will actually be located along the taxiway, allowing freighters to interface with them, just as railway side-spurs allow freight trains to move alongside factories for raw material delivery and loading of finished products. Just as passengers in passenger terminals move from ticket counters to gates via concourses and from the concourses into the planes via connecting jetways, the JIT factories would contain computerized conveyor systems along a central movement corridor and feeder lines connecting the central movement corridor to the freighter. Freight transfer logistics would be developed so that while one feeder line is unloading components and materials from one end of the plane, another line could be loading finished products at the opposite end. All factories would have rear road access for transferring products to and from trucks for local and regional distribution to customers and to existing commercial airports for domestic air freight.

There will likely be certain economies of scale for centralizing U.S. customs, security, sophisticated loading equipment, and smaller load pick-up and delivery by having central distribution terminals rather than having freighters taxi directly to each factory. The factories would be connected to the central distribution facilities via high-speed electronic transfer vehicles (ETVs). These central facilities would have areas for unit-load devices (ULDs) and storage areas (slots) for several hundred units up to and including 20-foot containers. They would interface with nose- and side-loading aircraft via nose docks and feeder lines. The docks would be served via ETVs operating throughout the industrial complex, picking up and delivering cargo pallets and containers to computer-designated storage slots in a manner similar to modern computerized baggage handling in today's largest airports. Freight will be automatically weighed as it enters the facility and the weight and balance information prepared and destination checked for loading on each specific flight. Thus, when Cargolux Flight 276 pulls up to the nose dock for loading, the full load is automatically plucked from the stacks and slots in the proper loading sequence and loaded on the aircraft. The same procedure will work in reverse when ETVs arrive to pick up containers and pallets from the aircraft to be delivered to the JIT factories. Each centralized distribution facility would be designed so that numerous freighters could be loaded and unloaded simultaneously. Intermodal operations could bypass the terminal with

20-foot intermodal containers moved directly from the aircraft to prestaged truck chassis.

In addition to the JIT manufacturing and central distribution facilities, the complex would contain critical inventory replacement warehouses with round-the-world and round-the-clock communications networks. Critical parts would be stored for emergency shipment to international customers or dealers. Thus, a message to this center for an emergency replacement part for an advanced technology machine in Bangkok or Brasilia would be relayed quickly and that part placed on the next flight to that destination.

The complex would contain two 13,000-foot runways (the length necessary for giant cargo aircraft of the future and possible hypersonic freighters) and two parallel taxiways on either side of each runway. Each of the four taxiways would be anchored at each end by two global air cargo companies (e.g., Federal Express, Cargolux, United Parcel, Burlington Air Express) with their own aprons and maintenance facilities. With industrial plants lining both sides of each taxiway, there would be approximately ten miles of taxiway siding upon which the JIT facilities could locate. A high-speed monorail passenger mover would connect the buildings, parking, public transportation and lodging facilities.

Preliminary analysis done by the Kenan Institute's Center for Manufacturing Excellence shows that these manufacturing facilities alone would generate a minimum of 30,000 jobs directly, with substantially greater indirect job generation through employment multipliers. At full capacity, it is estimated that the complex would contribute as much as $50 billion annually to North Carolina's economy. This does not include the economic impact of the complex on manufacturing and distribution facilities located within three hours driving distance of the complex. These facilities could conduct a full day's production, truck it to the air cargo complex, and have it delivered via overnight cargo to virtually anywhere in the world.

Costs of building the basic complex (excluding the factories and air cargo anchor buildings) are initially estimated to be $400 million, predicated on land costs and other locational factors. Note this is a very small portion of the projected annual economic returns that the complex would generate and less than 5 percent of the budgeted costs for North Carolina's future highway development plan. This also excludes cost estimates of manufacturing facilities that would be assumed by the companies located at the complex.

A minimum of 15,000 acres would be required for the complex. It should be located on or very near a major interstate highway within three hours driving time of all three major metropolitan areas in the state, and within one hour's driving time of at least one major metropolitan area (Charlotte, Raleigh, Greensboro). Flat topography would hold down construction costs, and the complex needs to be served by the full complement of utilities.

Most flights will be at night by many very large freighters. Aircraft noise restrictions and inevitable future restrictions on the number of night flights in metropolitan areas, as well as the massive amount of land needed for the entire aviation-industrial complex, point to a rural location of minimal population density but maximum highway accessibility. No tall objects should be within 10 miles of the complex and all land up to five miles from the complex should be appropriately zoned to minimize conflicting functional use. Free Trade Zone status must also be obtained for the complex.

Since the vast majority of the anticipated flights to the global air cargo-industrial complex will be international, this complex should substantially benefit North Carolina's existing airports that handle cargo. Many of the large loads that arrive at the complex from abroad on the freighters will, in turn, be broken down into smaller parcels and trucked to existing commercial airports, where they will be placed in the bellies of passenger planes for speedy delivery to national markets.

Studies by the Federal Aviation Administration and Transportation Research Board repeatedly document that virtually all major U.S. airports (including Charlotte and Raleigh-Durham) will reach maximum capacity by the early 21st century. As planning for the complex moves forward, consideration should be given for developing a passenger transfer airport--a wayport--as a second phase at the site (year 2005-2010) and a third phase development (year 2010-2015) of short-time use business centers, hotels, and recreation facilities to serve in-transit passengers flowing into and out of the wayport. The wayport would complement the global air cargo-industrial complex by offering cargo space for smaller loads in the bellies of passenger planes frequently flying between the wayport hub and commercial airports around the country.

Conclusion

This article outlines a concept for a global air cargo-industrial complex for North Carolina. Addressing the full range of engineering, environmental, regulatory, and logistical issues that would make the concept a functioning reality, is beyond the scope of this article. Rather, the concept is put forth with the broader, pro-active objective of harnessing and leveraging the fundamental forces shaping our economic future to place North Carolina in a developmental leadership position in the 1990s and beyond.

As all states, and even nations, seek to create comparative advantages that will nurture local industries and attract new commercial development, the state with the vision to see the handwriting on the wall, before the other states or nations even see the wall, will catapult ahead. It is natural that North Carolina, the birthplace of aviation and the state with the highest percentage of its workers in manufacturing, would combine the two in a visionary manner, thereby substantially enhancing the economic competitiveness of the state and the nation. □

Research and Advocacy Group Established

Chester Hartman

How can social science research aid advocacy efforts to address the intersection of race and poverty? How can researchers and activists in this area begin to network with each other on a regular basis to exchange information and develop strategies?

A new organization, the Poverty & Race Research Action Council (PRRAC), has been convened by major civil rights, civil liberties and anti-poverty groups, to address these questions. With substantial initial support from the Rockefeller Foundation, funds will be channeled into research grants tied to local, state and national level advocacy strategies for litigation, legislation, community organizing, public education and other activities that support progressive social change.

PRRAC will also establish a communications network among advocates and social science researchers. It will hold conferences, publish reports and disseminate ideas and materials.

PRRAC's first grant awards represent a cross section of issues, players and remedies sought for persistent race and poverty problems. Here are some examples:

- Legal Services of New York, among other organizations, has brought suit claiming that the consequences of eviction for low-income New Yorkers are so severe, frequently including homelessness, that court-appointed free attorney services should be available. The PRRAC grant will enable completion of research on the outcome of eviction proceedings in which tenants have and have not been represented, and on the projected costs of establishing a right to counsel in such cases.
- Project BASIC, a low-income, minority, statewide advocacy organization in Rhode Island, and Rhode Island Legal Services have brought suit to require that replacement housing for public housing units demolished by the Providence Housing Authority meet Fair Housing Act and Civil Rights Act standards. PRRAC funding will enable researchers to document the failure of the housing authority and HUD in meeting these statutory requirements and to propose remedies. The resulting litigation and supporting research will be of use in other cities where public housing projects are being replaced.
- High growth rates in California have exacerbated housing affordability for low-income residents, who are primarily racial minorities. PRRAC funds will enable the Coalition for Rural Housing Project to document these trends, develop affordability indices, and work toward a series of legislative remedies, as well as undertake public education and organizing. This model will be useful in other states experiencing similar trends.
- Evidence exists that homeless children in Chicago are not receiving an adequate education, as required under the McKinney Act. PRRAC will fund research to document this failure, in order to assist the Legal Assistance Foundation in preparing a lawsuit. The resulting research, litigation and public education is intended for use as a model for other cities where similar violations of McKinney Act requirements exist.

Funding proposals for advocacy-oriented research will be sought from advocacy groups with the capacity to undertake the research themselves, from advocacy-researcher teams, and from researchers linked to advocacy groups. For those cases in which groups do not have a research capacity or cannot find an appropriate researcher, PRRAC will serve in a brokerage capacity, introducing groups to progressive academics and others who have the capacity to assist them.

While housing will be the PRRAC's initial focus, other areas will be incorporated and funded as well. The next areas of concentration will likely be education and health. Projects that cross subject-area boundaries are especially welcome.

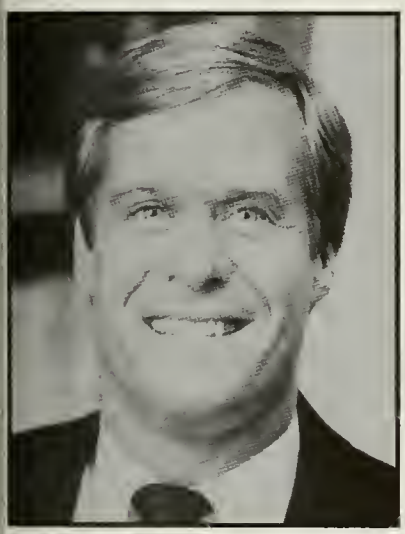
PRRAC's long-range goals are to influence the social science field to produce more relevant research of use to advocacy groups and to influence the agenda of advocacy groups through exposure to the results of relevant research.

To add your name to the mailing list, receive a brochure, or apply for funding, contact Chester Hartman at PRRAC, 1875 Connecticut Avenue NW, Suite 714, Washington DC 20009, (202) 387-9887. □

Chester Hartman is the president/executive director of PRRAC. Formerly a visiting professor in the Department of City and Regional Planning at UNC, and most recently a Fellow at the Institute for Policy Studies, Hartman is an urban planner, housing activist/researcher, and current chair of Planners Network.

A Carolina Planning Interview With Wib Gulley

To complement the articles written by practicing planners that appear in this issue, the editors of Carolina Planning *interviewed Wib Gulley, chair of the board of the Triangle Transit Authority, a regional public transportation agency for Durham, Wake, and Orange counties. Prior to assuming this position, he was mayor of Durham from 1985 to 1989. Gulley practices law in Durham and is active in a number of other community organizations. This interview took place in February 1991.*



Wib Gulley

Q: *What is the Triangle Transit Authority?*

A: It is a relatively new organization created by the General Assembly and Wake, Durham, and Orange counties in 1989. The board of directors started meeting in January 1990. Through the winter and spring of 1991, we have been engaged in a strategic planning process which we hope will yield a clear, defined statement of objectives and a work program for achieving those objectives over the next three to five years.

First, the authority is clearly going to try to be a major force for ridesharing in the three-county region. We have taken on responsibility for the Tri-A-Ride program, which had been part of the Triangle J Council of Governments. They made a very good beginning with it, but we want to take that program and lift it to new heights. Rather than one urban core growing out, the Triangle has several smaller cities growing together. There are urban densities, but these are separated by the Research Triangle Park (RTP) and other lightly populated areas. Ridesharing could hold particular promise as a way of alleviating traffic congestion in this region.

Second, there needs to be intercity bus transportation. We've got a wonderful system in Chapel Hill, a good system in Raleigh, and a system that has not been very good in Durham (but, hopefully, with the city taking it over, will get better). But these systems don't link up. In fact, with one exception, the Blue Line running from Chapel Hill to Duke [in Durham], they don't link at all. It's hard to believe. Also, there's nobody running public transportation regularly to RTP and the airport.

We envision an intercity bus system that would link the three city bus systems with each other and with RTP and the airport, so that citizens would have an affordable, dependable, and quick way of getting around. Later there could be links to some of the outlying areas--Smithfield, Chatham County, Hillsborough, and Granville County.

Intercity transit is not just an interest of people in the communities; the airport authority has a great interest in this as well. They have studied the projected number of arrivals and departures they will have in ten years or so, the massive amount of parking they will need on-site, and the huge cost of providing that parking. That process has made them very conscious of the need for public transportation.

The third area of activity is going to involve strategic corridors and how to work with them. By this I mean high occupancy vehicle (HOV) lane consideration for roads between Raleigh and RTP and between Durham and Chapel Hill. The creation of HOV lanes would allow a more significant reduction in traffic congestion than could be provided by adding another regular lane to the roads. We're also looking at rail corridors in the region. We need to know where these corridors are located and what we can do to help the effort to preserve them as they are, and then perhaps to be able to come back later for some kind of new use.

The fourth area of action involves meeting with government officials, the private sector and business, environmental groups, and citizen groups in the region to discuss the kind of transportation system we want in the year 2010, for example. In twenty years, what do we expect the region to look like, and what transportation options should we have in place? If we are to have some kind of fixed guideway system, whether it is

light rail or an elevated track system, we will have to make that decision region-wide. It will take some number of years, obviously, to raise the funds at the state, local, and federal levels to put that system in place. To begin it we first must reach a consensus that this is something we want to do, and decide exactly what we want to do.

This region is facing large decisions in the next year or two with transportation and transportation choices. From the legislation that passed the North Carolina General Assembly in 1989 there was a large trust fund created for highway improvements. In that trust fund, there is approximately a billion dollars for highway improvements in the Raleigh and Durham areas. That may be an investment that we'll make as a region, but as a region we may want to take another look at that investment. We could talk about a combination of road improvements with some kind of a fixed guideway system that we think would give us a better community.

> ***"There is a growing appreciation that we have not given the transit and public transportation options the same kind of support that we give to roads and cars."***

A fifth area that will be a part of the authority's work is to continue to enhance our understanding and appreciation for the close tie between transportation and land use. That is, you cannot say we're going to have certain roads and modes of transportation that will be in a particular configuration, but we're going to do land use planning as if it's a distinct and separate process. One is going to configure the other, and the two have to go together hand-in-hand. The authority sponsored a conference in November 1990 to begin to focus on that decision. Local governments, which really control land use, realize that their development decisions, zoning patterns, and zoning standards need to be transit-friendly if we are indeed to have some kind of transit system that works. The way that we develop and use the land has to lead our vision of how we want to transport ourselves.

Q: *How can the public be encouraged to adapt their lifestyles to support the type of land use patterns that are required to make a public transportation system work?*

A: That's one of the most fundamental questions. I've got several preliminary observations. From listening to people over the last couple of years, I think there is already a great deal of interest and excitement in this area about the possibilities for some kind of light rail transit or fixed guideway system. This is tied to the interest that many people have for preserving the region's open spaces--the parks, the forests, the greenways. It may also stem from an appreciation for how well transit systems work in other parts of the country, and a great deal with avoiding horrible problems of traffic congestion and air and water quality degradation. So, I think there's already a significant level of interest in this area.

There is a growing appreciation that we have not given the transit and public transportation options the same kind of support that we give to roads and cars. Part of what we're going to have to do is give people a choice. We have spent public money to make roads and automobiles so easy and available and accessible compared to public transit options. There really hasn't been a choice. One of the things I'd love to do is to give people a real choice and then watch what they do.

We do need greater residential and commercial densities in order to have an economically efficient transit system. And in some cases, that means a lot more density than seems to be the ideal in the Triangle area, where folks seem to want suburban areas sprawling out with quarter-acre or half-acre lots. I feel that the willingness to consider greater density is already developing. It's coming from several sources in our region. There is an appreciation that not everyone can afford a half-acre lot and the house that's built on it. In fact, in this region, probably a majority of people cannot afford a home on this size lot.

Citizens understand that the loss of some open space occurs with suburban sprawl. This is pushing people to consider alternatives, to be open to building at greater densities. We have to begin to look around us. There are residential areas in Durham, Cary, and Raleigh where the proper densities exist to make transit or fixed guideway systems work well. There are people living in these areas that are happy with them, but other people probably do not know this. We need to begin to tell people "Look at Trinity Park in Durham, look at the higher density neighborhoods in Raleigh and Cary. These are pleasant living areas that include both single-family, detached homes and some townhouses." People will relax when they see that high-density neighborhoods can be attractive and appealing. They'll see nice neighborhoods. In fact, we have people moving back to downtown areas in Durham, Raleigh, and Chapel Hill because these areas are attractive and offer conveniences that aren't available elsewhere.

When you're talking to local governments that make the decisions, you're asking, "How much money do you want to spend for construction over the next twenty years? How much are you going to spend in road improvements to continue to make suburban sprawl work? How much do you want to spend on measures to deal with air pollution and water pollution? How much more money do you want to spend for increasingly scarce open space land and parks?" Local governments will find it difficult to approve these expenditures when faced with the fact that a lot of tax dollars can be saved by moving to a more thoughtful, attractive, dense living and working environment.

To make this type of development fashionable and attractive, it is necessary to simply make the costs clear. There are a lot of costs to suburban sprawl that people don't always

think of. I'm not just talking about a loss aesthetically or the loss of open space. I'm talking about the cost to our pocketbook and higher taxes. If you make the costs clear, that's going to make the alternatives attractive.

Q: *How will the work of the Triangle Transit Authority be funded?*

A: We worked for about three years with local government officials from all three counties (including the cities and towns) to fashion the concept of a regional transit authority: the details about how it would be governed, how it would operate, where it is to operate, and how it would be funded. There are several ways to fund the authority. The recommendation that went to the General Assembly contained two funding alternatives. The General Assembly passed that bill in 1989. Unfortunately, the House took out one of the ways to fund it, and the Senate took out the other. We were left with an authority and a chance to get rolling, but no money. So we have been back working with the General Assembly, both last spring and this spring, continually trying to develop some options for legislators to consider, hoping to find something that everyone will be comfortable with. That's been a problem.

In spring 1991, the General Assembly is going to consider a couple of ways to fund the authority. One option that is attractive to the authority and to the General Assembly as well is to have some kind of percentage tax, like a sales tax, on the use of rental cars. I think it is going to get a closer look. This is local funding; all that the General Assembly is going to do is enable the three counties to put some kind of tax in place. The logic is that this tax is transportation related. We put something of a disincentive on the use of rental cars to get around the region, then take the funds and strengthen the public transportation alternatives.

Another alternative is a parking tax. The bill that has been introduced would put some kind of yearly fee on all parking spaces. It's interesting and certainly would be broad-ranging. This option might pose some questions about who pays for what space and how you collect it. I'm not sure how much of that has been worked out. There are some members of the General Assembly who are expressing a concern about this type of fee, but it also has some significant support. In the end there may be a tax on all parking to discourage single-passenger car use. A more narrow refinement of the concept might be a tax on parking at the airport, to discourage parking there and encourage public transit. A tax just at the airport might be an initial step on which to build.

The authority has figured out that to go forward with our program, to start doing some of the things we've been asked to do, we need a $2.5 to $3 million annual budget initially. Any funding mechanism that the General Assembly is comfortable with and that seems reasonable, we're open to. We just want to be in the area of $2.5 to $3 million to start the job.

[As *Carolina Planning* went to press, a bill to authorize a tax on rental cars had passed the N.C. House and was being considered by the Senate Finance Committee.]

Q: *How has your experience as mayor of Durham influenced your thinking about transportation issues on the regional and state levels?*

A: As mayor I began to appreciate several things. One is that Durham is growing, and I saw the need for real control and management of that growth, so that it works to the benefit of the community. That leads to a concern for the mobility options that are available, and to roads and how much is spent on them. I became very conscious of the economics of our transportation alternatives and their impact on the quality of life in our community.

But even more directly I became aware of the fact that we lacked a decent public transportation system in Durham. We had a bus system, but it was barely there. That was hurting our community in many ways, and perhaps most critically it hurt us in our economic development. It's a hindrance because people in Durham are not able to get from their homes to many of the jobs in the area. There is no public transportation to the Research Triangle Park, or to Mitsubishi in the northeastern part of the county, for instance. That means many Durham people are not getting those jobs. If they have jobs but can't get around to spend their earnings--buy food and meet their family's needs--then that hurts us as well. As mayor I gained an insight into how our lack of decent public transportation options locally was hurting our local economic development opportunities.

In my last couple of years as mayor, I began to work with folks in the region, not just public officials, but also private businessmen. You begin to find that there are significant problems in this region with getting people to where the jobs are. Many businesses are hindered in their ability to expand, and other businesses are hesitant to move to the Triangle because of concerns with work force mobility.

The CEO of Bahlson, W.C. Burkhardt, is vice chair of the board of the Triangle Transit Authority. He talks quite eloquently about his concerns, and those of his fellow corporate executives, in being able to get the work force to where the jobs are, and how critical public transit is going to be for that purpose.

Q: *How do you get people in positions of power to work together and make decisions on issues such as regional transportation?*

A: The way to do it is to realize that it's a decision and a direction that everyone in the community has to work on together. It is necessary to get to know the different leaders in different parts of the community, to sit down and talk with them. It takes some time to develop a relationship. The authority must try to help them understand how it is to their benefit, in their self-interest, to strengthen our public trans-

portation alternatives and how we're hurting ourselves because we haven't done it.

For a number of groups--such as neighborhood groups and environmental groups--that understanding is already there. In some parts of the business community, that understanding is already there. But you want to continue to reach out to the elected officials, planners, and other parts of the business community to help them understand the costs that they're experiencing personally, how it directly affects them, and the benefits that could be realized.

I have to say that we've had real good experience with that. The Triangle Transit Authority is a special organization and one of its strongest features is a board that has representatives from the region's business community, development community, and private citizens. We've been able to work together and talk about the shared interests that we have.

Q: *What else would you like to say?*

A: The General Assembly obviously made a large commitment to highways with the $9 to $10 billion trust fund that was established, and I know that questions have been raised as to whether that amount of money is necessary to do the job well and whether we're really going to provide for the economic development of the state best by putting all that money in that particular pot.

My preference for talking about public transportation is not to raid anybody else's pot of money, but to point out how massively we have underfunded and neglected the public transportation needs of this state and the significant benefits that would flow from it. Unfortunately, the number of people who work in the Public Transportation Division of the North Carolina Department of Transportation (NCDOT) is small, but they do a very effective job talking about the benefits of public transit. The North Carolina Railroad Corporation--Steve Stroud and those folks--do a great job of talking about the way we could help the state in so many ways by restoring a good passenger rail system.

I would like to see the General Assembly move to identify funding sources and make a significant commitment to a trust fund for public transportation.

One of the exciting things about the public transportation field is that as you get more involved in it, you begin to see the close link with land use and the transit options that become possible if we use the land wisely. We also see things that are attractive in and of themselves. Everything that I've been able to learn about neo-traditional planning, bringing back the village concept of communities, is very exciting in its own right, and stands on its own. It would get us back on our front porches, seeing each other in the evenings, and perhaps allow us to walk to the grocery or drugstore and get some of those chores done. The neo-traditional concept, however, also obviously plays back into and reinforces the public transit options that we could then provide to our communities.

So, that's one of the real exciting things for me. The question is not, "Do we have a chance for that in our community?" The Triangle Transit Authority, with NCDOT's Public Transportation Division, engaged some consultants to come in and look at this region and our options for fixed guideway transit. And their report from a couple of months ago [September 1990] couldn't have been clearer. The Barton-Aschman study [*Research Triangle Regional Transit/Land Use Study*] said that this region absolutely has corridors that will work and work well on an economic basis as well as a technical basis for fixed guideway systems--not today, but fifteen to twenty years from now--if we make the commitment as a region to do that and to have our land use patterns support it. It is absolutely possible for all of the communities in the Triangle region to do that. The good news is that we can make it our future if we choose to do so.

Q: *How do you get past the political hurdle of investing the money now--which is what's necessary--when the benefits are going to be enjoyed maybe ten to twenty years from now?*

A: Part of the answer is that you walk in small steps and you do it step-by-step. I don't think the first step will be finding and then investing massive amounts of money. Instead, the first step is to bring together the communities in the region and to help folks start asking, "What are our options for the future, what are the pros and cons of those options, and which one do we want to choose?" My faith is that people are going to choose to move away from suburban sprawl to more interesting, exciting ways of living and of getting around.

Once that understanding and the sense of the costs and the benefits have been laid out, you can begin to build consensus. We have to continue building it. But once we have the local commitment there, it's simply a choice of identifying what local resources we can commit to it, and then trying to bring in some state resources.

Obviously, as has been true in every community in America, the federal government is going to have to step in and play a major role, and I continue to believe that there will be money there. I've had some assurance from Senator Terry Sanford and some of our representatives that they're quite willing to work hard to provide those funds. Congressmen David Price and Tim Valentine couldn't be better situated for us as a state. [Price is a member of the Transportation Subcommittee of the House Appropriations Committee; Valentine is a member of the Surface Transportation Subcommittee of the Public Works and Transportation Committee.] The tough part might be getting the communities together to decide as a region where we want to go. After that, I believe we will be able to find the funding. □

A Call for the Integration of Transportation and Land Use Planning

David Bonk

The coordination of land use and transportation is an issue that has received increased attention as concerns about the impacts of suburban sprawl, the cost and supply of energy, air pollution and traffic congestion continue to be debated. Transportation planners are now beginning to recognize the depth of the relationship between how land is developed and how people travel. Similarly, increased attention to public transit services has just begun to focus on the relationship between land use decisions and transit ridership.

While the relationship between land use patterns and transportation would seem apparent enough, it has been only recently that land use/transportation linkage has been given more attention. The rigid separation of land use planning within planning departments, transit planning within transit agencies and roadway planning within traffic engineering departments has tended to result in little coordination.

During the energy crisis of the early 1970s there had been some analysis of the transportation impacts of alternative land use patterns, concentrating primarily on transportation use and energy consumption. Various studies concluded that more compact development patterns would result in reduced auto mileage and energy consumption. More recently, Robert Cervero's detailed study of suburban transportation problems in *Suburban Gridlock* and his later *America's Suburban Centers*, re-emphasized the transportation/land use linkage and illustrated the degree to which transportation problems have resulted from a lack of coordination with land use planning.

David Bonk is senior transportation planner for the town of Chapel Hill, N.C., and has supervised the Transportation Planning Division in the planning department for the past six years. He received both his B.A. and his M.P.A. from Western Illinois University.

Neo-traditionalism

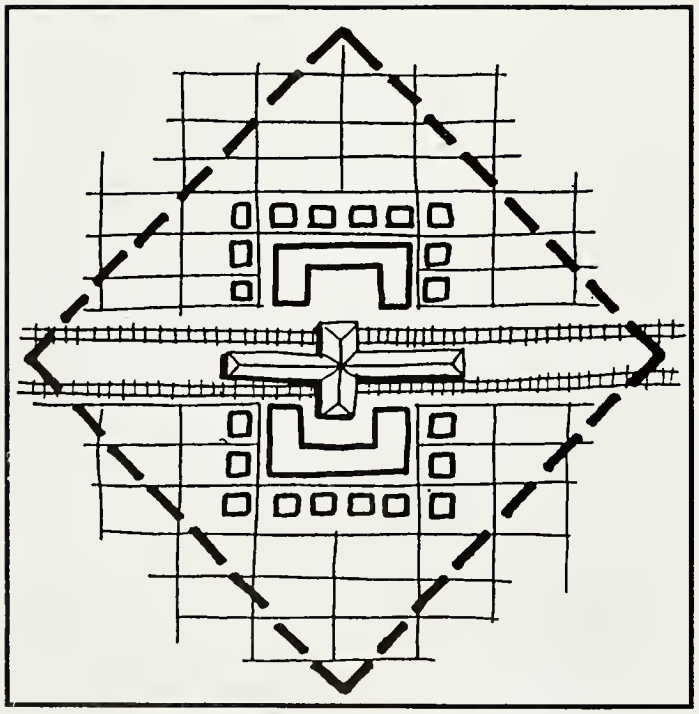
At the same time as discussions about the land use/transportation relationship have been re-kindled, there has also been increased interest in "neo-traditional" or traditional neighborhood planning. These concepts, promoted by Andres Duany and Elizabeth Plater-Zyberk in their Seaside development, and applied by a variety of others in similar developments, have caught the attention of the public and elected officials alike as an alternative vision for future development.

Neo-traditional planning borrows much from previous planning practices. Neo-traditionalists have identified Raymond Unwin, an early 20th century urban planner associated with the Garden City, among others, as inspiration for their concepts. In *Town Planning in Practice*, written in 1909, Unwin commented on the evolution of design and the growing impact of the automobile, stating that "the character of modern traffic, particularly the present character of motor traffic, has rendered frontage to the main road anything but desirable for residence." Unwin also seems to have anticipated the modern suburban environment, writing "there is nothing whatsoever in the prejudices of people to justify the covering of large areas with homes of exactly the same size and type. The growing up of suburbs, occupied solely by any individual class is bad, socially, economically and aesthetically . . . it leads, too, to a dreary monotony of effect, which is almost as depressing as it is ugly." [1]

The proponents of neo-traditional planning have concentrated on the social and environmental benefits of the traditional neighborhood or village design. They have also correctly maintained that the compact nature of village planning will result in greater incentives for pedestrian movement and reductions in auto use due to the close proximity of commercial activities. Very little connection has been made between neo-traditional planning principles and public transporta-

tion, however. The combination of increased focus on the transportation/land use relationship and continued interest in neo-traditional planning offers an important opportunity for transit planners to pursue land use policies that will result in transit-friendly environments.

A closer examination of the basic tenets of neo-traditional planning reveals that the emphasis on higher density, compact residential development served by a grid-like street system that surrounds an intensely developed commercial/office core is an ideal environment for successful public transit services. The Urban Mass Transportation Administration (UMTA) has recognized the importance of the land use/transit relationship. UMTA has identified "suburban mobility" issues as a planning priority for local transit agencies. These suburban mobility issues include re-evaluation of land use policies to determine if the suburban environment can be made more transit-friendly. UMTA has also published *A Guide to Land Use and Public Transportation*, which reviews the need for better integration of public transit services into land use decisions. This guide is a reprint of a publication prepared by the Snohomish County (Washington) Transportation Authority. The guide maintains that local communities can derive both direct and indirect benefits from the integration of land use and transit decisionmaking. Transit service can be provided much more efficiently if service is coordinated with development patterns and regulations. Transit-friendly development patterns also tend to promote pedestrian movement and bicycle use, further reducing traffic congestion. Effective transit service can also translate into increased economic activity through stimulating additional growth.



The Snohomish County Transportation Authority's guidelines call for the development of activity centers around neighborhood rail stations. Activity centers include "convenience" establishments and higher density residential uses.

Many of the site design examples used in the UMTA guide are very similar to neo-traditional designs and they illustrate clearly the symbiotic relationship between transit and traditional neighborhood planning.

Pedestrian Pockets

Peter Calthorpe, a San Francisco-based architect and urban designer, through his "pedestrian pocket" design concept has attempted to make a direct connection between transportation issues, specifically public transit, and neo-traditional planning. His pedestrian pockets have been designed within a one-quarter mile walk from a central activity core. These activity cores are designed to provide for intense commercial and office uses in close proximity to higher density residential uses. The different uses are linked by a road system that provides multiple routes between neighborhoods and the activity core. The Calthorpe design envisions a series of pedestrian pockets linked together along a corridor by a fixed guideway transit system, such as light rail. The non-residential uses within individual pedestrian pockets would vary, with one pocket developing a large office base, while an adjacent pocket encourages commercial uses. As Calthorpe has described them:

> A Pedestrian Pocket does not function as a self-sufficient town. People are not expected to work in the same Pocket in which they live or to find all their shopping needs or recreation within the hundred-acre development. In fact, the Pockets are meant to weave back together the currently isolated parts of our suburban environment; to put the elderly and kids without cars within reach of old downtowns as well as new shopping malls, parks and other Pockets; to allow workers access to exiting and new job opportunities through regional transit, not just within a single town.[2]

The design of the pedestrian pockets are highly compatible with the provision of public transit services. Calthorpe has proposed that a series of these residential/commercial/office areas, none larger than 160 acres, be aligned along a fixed guideway system, such as light rail, to provide for movement between the different pockets and a larger downtown location. The size limit of 160 acres reflects a realistic reflection of a quarter mile as the maximum distance most pedestrians are willing to accept. A quarter mile is also used by many transit agencies to provide the maximum distance patrons are willing to walk to access public transit service. While this quarter-mile standard is widely accepted, actual willingness to walk varies greatly with the mode of public transportation. The Portland transit system has found that while patrons are only willing to walk a quarter mile to access bus routes, many are willing to walk up to one-half mile to a light rail station. The design of the local street systems within

these pedestrian pockets increases the viability of local bus service, and the proximity of the fixed guideway stations to the surrounding residential areas encourages bicycling or walking to access the transit service.

Sacramento

Sacramento, California, which constructed a light rail system during the late 1980s, retained the services of Peter Calthorpe to refine the pedestrian pocket concepts and to relate them directly to public transit systems. Sacramento has reinforced the transit/land use relationship in their neo-traditional planning by focusing on transportation goals in the development of their design guidelines. The marriage of neo-traditional planning and transit planning has produced a detailed concept called Transit Oriented Developments (TODs). These TOD guidelines, released in September 1990, are based on a careful evaluation of future regional needs and the following principles:

- Maximize the use of existing urbanized areas
- Reduce consumption of non-urban areas
- Link land use with transit
- Reduce the number of auto trips and regional vehicle miles traveled (VMT)
- Reduce air pollutant emissions
- Provide for a variety of housing types
- Design the urban area efficiently

The Sacramento guidelines identify two types of TODs: a more intensely built up Urban TOD and a slightly less dense, more residential Neighborhood TOD. These TODs are surrounded by secondary development areas that are less densely developed and more auto-oriented but still able to take advantage of the services within the TOD through an interconnected street system.

The impact of these neo-traditional guidelines on Sacramento is yet to be fully felt, but at least one developer, with a previously approved site plan that reflected a typical 1980s suburban design, chose to entirely redesign his development to incorporate the TOD concept completely. As a result of this redesign and Sacramento's commitment to provide transit service to the surrounding area, Apple Computer has announced their intention to relocate a portion of their operations to the non-residential area of the TOD.

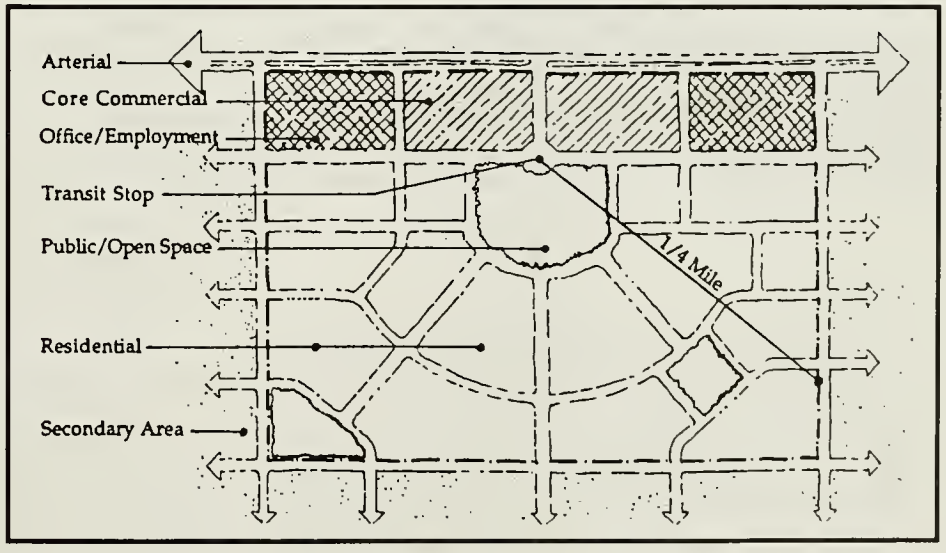
Research Triangle Study

In 1986, the Transportation Advisory Committees from the Raleigh Urban Area and the Durham-Chapel Hill-Carrboro Urban Area created a series of subcommittees made up of local transportation and planning staffs to explore various issues related to developing regional public transportation services. One of these subcommittees was charged with reviewing the linkage between land use and public transportation, with special emphasis on fixed guideway transit. The land use subcommittee determined early in the process that any effort to develop fixed guideway public transit should be linked closely to land use decisions.

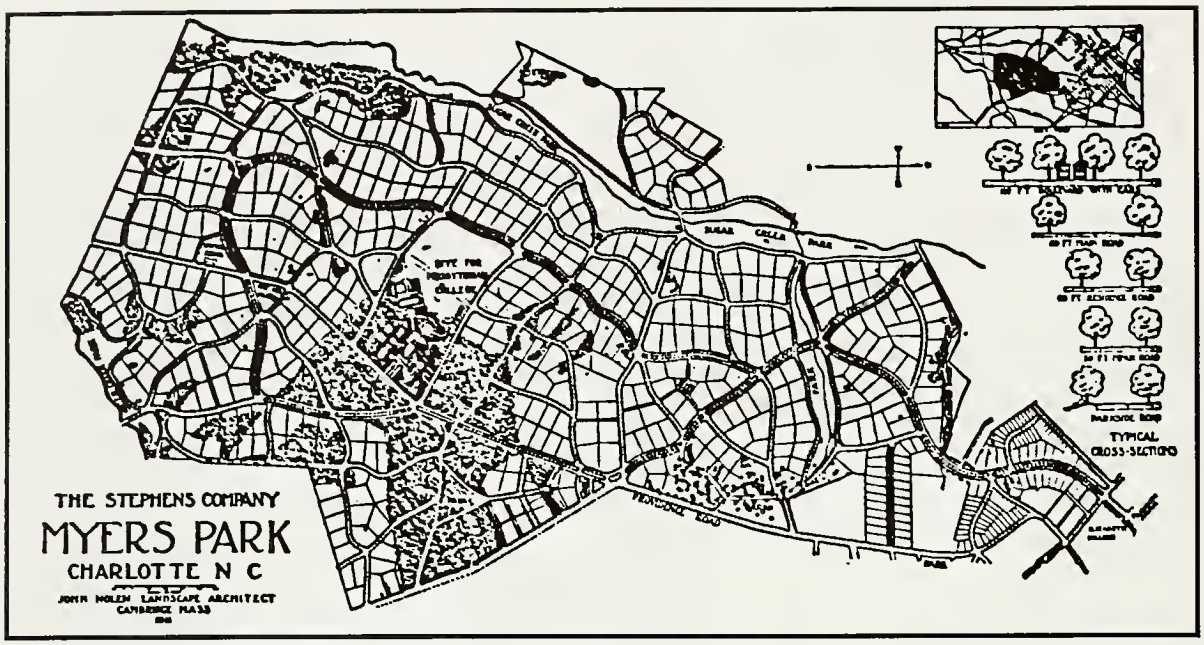
In the fall of 1990, this land use subcommittee released its findings, including a detailed report by Barton-Aschman Associates of Washington, D.C. This report analyzed the land use/public transit relationship, specified development guidelines to support light rail/busway fixed guideway systems, and evaluated the feasibility of fixed guideway development along specific corridors.

The Barton-Aschman report reviewed the limited land use information available from the cities that have developed light rail/busway systems, and suggested generalized guidelines for development density and mix based on ridership necessary to support the operation of a fixed guideway system. Barton-Aschman reviewed the ongoing work of Calthorpe and Sacramento County in preparing their analysis, including an overview of Sacramento's TOD guidelines as an appendix to their final report. The report identified the Calthorpe pedestrian pocket concept and the translation of that concept into actual development guidelines in Sacramento's TOD policy as a model that should guide the further development of land use policy in the Triangle area.

Once density and design guidelines were established, Barton-Aschman evaluated existing land use projections along four light rail/busway corridors in the Raleigh-Durham-Chapel Hill Region. The consultant compared year 2010 development totals within each corridor to minimum ridership levels. The corridors assumed a two-mile area of impact along a



Guidelines for Sacramento's Transit Oriented Developments (TODs) show a pedestrian orientation around a public transit node.



This plan of Myers Park (in Charlotte, N.C.) illustrates the way in which many turn-of-the-century developments were built around a public transit system. The wider streets support a trolley system.

fixed guideway line, with the greatest potential for ridership occurring within the first quarter mile from a station location. Not surprisingly, only one corridor showed a marginal potential to support fixed guideway ridership in 2010. The other three corridors fell short of the ridership requirement.

Barton-Aschman then re-evaluated each corridor, but rearranged development within each corridor to better conform to the land use standards they had previously developed. No additional development was projected for the corridors, nor was development from outside the two-mile limit of the corridor transferred into the fixed guideway corridor. When development was redirected, each corridor showed an ability to support fixed guideway transit systems.

The Barton-Aschman study illustrated clearly the impact of alternative land use arrangements on fixed guideway transit services. The Barton-Aschman study emphasized the importance of pedestrian access and increased residential density surrounding fixed guideway stations. While the study proposed increased densities in specific areas that would be served by a fixed guideway system, it also used local examples of residential projects that reflected those densities.

Conclusion

A process of linking land use policies and development with public transit services, particularly fixed guideway public transit, is not a new concept. The construction of street car lines at the turn of the century was closely associated with adjacent residential and commercial development. In some cases the street car lines preceded intense development and actually acted as a tool for directing development. Those cities in North Carolina that boasted extensive street car systems in the early part of the century, such as Charlotte and Raleigh, can trace land use development directly to those transportation systems.

Greater emphasis on the land use/transit connection will be necessary to ensure that the opportunities for influencing travel patterns presented by neo-traditional development are not lost. Transit agencies that are seeking to maximize existing transit services and to ensure greater ridership must coordinate with land use planners.

The greatest opportunity for meshing neo-traditional land use and transit may lie with the development community itself. Neo-traditional development, combined with strong transit services could result in exciting new development opportunities, particularly in a period of sluggish growth and continuing concerns about no-growth sentiment that stems from transportation congestion. □

Notes

1. Raymond Unwin, *Town Planning in Practice* (New York: Scribner and Sons, 1909), p. 294.
2. Calthorpe Associates, *Transit Oriented Development Guidelines* (Sacramento County, CA: September, 1990), p. 5.

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Urban Development, the Environment and Automobility

George T. Lathrop

North Carolina shares four transportation-related problems with the rest of the United States:

- Environmental quality
- Dependence on petroleum
- Congestion and delay on highway and transit systems
- The changing nature of cities

More specifically, the relationship shared by these problems involves the emergence of the automobile as the dominant means of personal individual transportation in the United States and the characteristics of the automobile itself.

During the 20-year span from 1910 to 1930, the automobile became the dominant means of individual, personal transportation. This photo was taken in Rockingham County, North Carolina.

Background

The automobile began to be available in the United States in significant numbers in the decade between 1920 and 1930. As Table 1 shows, in 1910 there were only about 458,000 automobiles in the United States and only one automobile for every 201 persons. The number of automobiles increased between 1910 and 1920; however, by 1930 it had jumped to 23 million passenger cars, while the ratio of persons to cars had fallen to 5.3. During that 20-year span (1910-1930) the automobile replaced the horse as the dominant means of individual, personal transportation.

Second, during those same two decades, there was considerable growth in national population and in housing. Specifically, as Tables 2 and 3 show, since 1930 the number of non-farm occupied housing units has more than doubled, from slightly over 23 million to over 60 million, and the urban population has increased from 69 million to 149 million. Significantly, one-half of the current non-farm houses and urban population were added during the period from 1930 to 1970, *after* the automobile began to make its presence felt in significant numbers.

Third, for much of this same period, federal housing and

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Table 1. Passenger Car/Taxi Registrations (in 1000's)

	Passenger Cars	*Population*	*Persons per Passenger Car*
1910	458	91,972	201.0
1920	8131	105,711	13.0
1930	23035	122,775	5.3
1940	27466	131,669	4.8
1950	40339	151,326	3.8
1960	61682	179,323	2.9
1970	89230	203,212	2.3

Table 2. Occupied Housing Units (in 1000's)

	Total	*Non-Farm*	*Farm*
1910	20,256	14,132	6,124
1920	24,352	17,600	6,751
1930	29,905	23,300	6,605
1940	34,855	27,748	7,107
1950	42,826	37,105	5,721
1960	53,024	49,458	3,566
1970	63,450	60,351	3,095

Table 3. Urban Population (in 1000's)

Year	*Population*
1910	41,999
1920	54,158
1930	68,955
1940	74,424
1950	96,847
1960	125,269
1970	149,325

tax policy encouraged the ownership of single-family homes. Today the deductibility of the personal home mortgage remains the single major tax break for the majority of American families.

These surges of growth occurred in a context about which Anthony Downs, a prominent urbanologist at the Brookings Institution in Washington, D.C., has written:

> For the past few decades, one major vision about how U.S. metropolitan areas ought to be developed has become totally dominant.... This dominant ideal vision is built upon four pillars. Each is a key desire or aspiration shared by nearly all American households: The first pillar is ownership of detached, single-family homes on spacious lots. Repeated polls show that over 90 percent of all American households would like to own their own homes, and the vast majority want single-family detached units...
>
> The second pillar is ownership and use of a personal, private automotive vehicle. Every American wants to be able to leap into his or her own car and zoom off on an uncongested road, to wherever he or she wants to go, in total privacy and great comfort--and to arrive there in not more than 20 minutes....
>
> The third pillar of the dominant ideal vision involves the structure of suburban workplaces. They are visualized as consisting predominantly of low-rise office or industrial buildings or shopping centers, in attractively landscaped, park-like settings. Each such structure ought to be surrounded by a large supply of its own parking....
>
> The fourth pillar for this ideal vision concerns governance. Most Americans want to live in small communities with strong local self-governments. They want those governments to control land use, public schools, and other key elements affecting what they perceive as the quality of neighborhood life....[1]

Finally, although it is self-evident, suburbs of American cities, small and large, have been the primary location in which Americans have built the single-family homes that have realized their dreams and provided the basic shelter needed to accommodate large increases in population. Moreover, since the end of World War II--but particularly beginning in the 1960s and at an accelerated pace in the 1970s and 1980s--retailing and a considerable amount of employment, both manufacturing and office-oriented, have followed the residential boom to the suburbs.

Just as U.S. families have pursued the vision described by Downs, these employers have behaved in a rational and economically sensible way, as have retail developers. The employers are moving to the employees and building the workplaces Downs describes. Perhaps just as importantly, developers are behaving rationally in that they are building where development is relatively inexpensive. Land in the center of any urban region, where the highway and transit infrastructure exists to serve dense concentrations, is expensive because the competition for it is keen. Low-priced land on the periphery or in the suburbs makes much better sense from the cost point of view of the investor-developer. But the land is low-priced in part because there is no investment in infrastructure and very little competition for the land. Although the developer puts the local government in the position of providing the infrastructure after the fact of development, local governments welcome the development because of their perception that it adds to the base available for ad valorem taxation.

Alan Pisarski, in *Commuting in America,* describes the result of this shift in auto dependence and location within urban areas: a sharp, relative and absolute increase in commuting and travel within and between suburbs, and a relative and, in some cases absolute, decrease in the amount of travel oriented radially to the central city.[2]

One of the obvious by-products of this change in travel patterns is a relative reduction in the use of public transportation services in all but a very few of the largest cities. In part this is due to the reorientation of travel away from the radial corridors traditionally served by public transportation. It is also due, however, to the difference in the nature of travel in the suburbs: radial travel, while originating in fairly scattered

locations, at least has its destinations concentrated in the central part of the city. The new circumferential *inter*suburban and *intra*suburban travel is scattered both at the origin and the destination, making public transportation almost totally ineffective.

In summary, there is now a completely different pattern of residence, employment and travel than that of the 1910s and 1920s, and there are millions more people following this pattern. The emergence of the automobile as the dominant means of personal travel and mobility has been followed by changes that have increased its use and increased our dependence. All of these factors contribute significantly to the four problems cited at the beginning:

- Degradation of environmental quality, in some large measure due to automobile emissions and their effect on the atmosphere.
- Dependence on petroleum, directly attributable to the consumption of motor fuel.
- Congestion and delay, directly attributable to the amount of automobile use and available capacity in our street and highway system.
- The changing nature of cities, for which the automobile and the mobility it provides, was certainly a necessary if not sufficient condition.

Are There Solutions?

Almost without exception there is agreement that reduction in the dependence on and use of the automobile for personal mobility would have a significant effect on at least three of the four problems cited above. Some see a conscious effort to change the nature of urban development as contributing to the solution of the other three problems. Others believe that the form and density of our cities might change in response to a shift in personal transportation from the automobile back to public transportation.

Elizabeth Deakin has divided suggested views of, and implicit solutions for, suburban congestion and dependence on the automobile into seven groups:

> One view is that there is, in fact, no problem, or at least not one that demands special attention.... Doing nothing --or business as usual--is seen as the most prudent and expedient course of action....
>
> A second view is that the problem is simply one of inadequate financing: that the plans and programs to alleviate congestion are available and could be implemented expeditiously if only there were enough money....
>
> A third diagnosis of the problem focuses on institutions. Federal and state transportation agencies are not providing leadership, this argument goes; they are unable to break out of old ideas.... New ideas, a redefinition of missions, and a realignment of responsibilities are seen as prerequisites to obtaining the necessary commitments to proceed with actions to alleviate congestion....
>
> A fourth view is that the central problem is one of improper pricing of transportation facilities and services... New pricing strategies...could simultaneously discipline transportation demand and generate needed transportation financing efficiently and fairly....
>
> Other diagnoses emphasize failures of current planning practices. One such diagnosis is that government officials, civic leaders, and regional planners and engineers have failed to acknowledge the shifts in land development away from a central city orientation, and to respond with plans for facilities--principally roads--designed to serve suburban realities.... The need is for a major effort to plan and implement suburban-oriented roadways--both freeway mileage and local collectors and arterials....
>
> Another view is that transportation planners have failed to devise realistic, effective commuting alternatives for the suburbs. It is argued that increased emphasis on transit services, carpooling and vanpooling programs, alternative work hours, work-at-home options, and the like would encourage travel choices that are more energy efficient and less destructive of the environment....
>
> Finally, there is the argument that the failure to control land uses in the suburbs has produced the current congestion problems.... In this view, it is hopeless to expect transportation providers to build their way out of the congestion problem; coordinating land development with transportation capacity is seen as a necessity.[3]

A North Carolina Commentary on the Seven Views: How Well Do They Work?

Charlotte is approaching the ranks of large cities and, like Raleigh, Greensboro, Winston-Salem, Durham and several other cities in the state, is beginning to suffer the effects of suburban congestion which Washington, D.C. and Atlanta have "enjoyed" for several years.

Charlotte has attempted to cope with suburban congestion, and the four larger problems cited earlier with which it is linked, contemplating each of the implicit strategies suggested by Deakin. In roughly reverse order of their effectiveness, or potential effectiveness, here are the results to date.

Doing Nothing

As a conscious strategy, this simply is not politically feasible. Congestion is a political issue and local elected officials have promised their constituents that they will do something about it. Certainly, this is the case in Charlotte.

Pricing

Although sophisticated methods of *road pricing* now are proving the technical feasibility of the strategy, application to a wide-spread suburban network is still horrendously expensive and without legal precedent. Overcoming those two

barriers makes it beyond practical consideration in the near term. *Parking pricing,* however, is technically feasible, but in a context like Charlotte's, it simply does not occur outside the Central Business District. It is highly improbable that local elected officials would move to encourage or require parking fees throughout the city, even if they had the authority. Interestingly, a bill has been introduced this year in the General Assembly calling for a statewide tax on non-residential parking. More probable is the possibility that suburban developers and land owners will begin to charge parking fees as the value of land and the cost of constructing parking begin to climb. Even this seems unlikely in the near term.

Encouraging the Use of Alternative Modes of Commuting

Alternative modes of commuting are transit, ridesharing, etc. Charlotte is trying, but is having extremely limited success outside the market oriented to the Central Business District. Most important is the question of pricing. Free parking at suburban destinations, particularly for those who work, removes one of the major factors in encouraging carpooling, vanpooling or transit use.

> ***"Automobile use and petroleum consumption are simply too massive and ingrained to rely entirely on marginal measures."***

Improving Institutional Arrangements

Institutional arrangements include planning agreements, joint action and cooperation among governments, particularly local governments. This is not so much a solution strategy as it is a means to ensure concerted action on other strategies among the numerous jurisdictions/players in most urban situations. Setting aside those other strategies for a moment and speaking only of cooperation, both informal and formal among different political bodies, there certainly is interest in the Charlotte area, and there is limited informal activity. The problem also is not so severe in North Carolina because the state has given municipalities both unusually good annexation power and equally strong legislation regarding the formation of "island" suburban municipalities. North Carolina does not have the common situation of numerous small, incorporated suburbs, nor is Charlotte "landlocked."

Regardless, there are several stumbling blocks. Local governments are creatures of the state and the powers that they may exercise are assigned, reluctantly in this case, by a state without a strong tradition of home rule. This means that agreements between the cities and towns are difficult because there is no general authority or framework available. That particular problem may not be peculiar to North Carolina, but a second is: counties in North Carolina are forbidden, under the state constitution, to build or maintain roads. All roads outside a legal municipality are the responsibility of the state of North Carolina. This means that a significant local actor, the county, cannot participate in most strategies to deal with automobile dependence and suburban congestion, regardless of its interest.

Building Additional Capacity or Providing Additional Services

In short, this means spending money. Similar to municipalities across the country, those in North Carolina rely primarily on the real property, ad valorem tax and on sales taxes. Small additional sources of revenue have been made available by the legislature (and it controls the local governments' ability to raise revenue) over the past few years, but they are not large enough to cope with the demands of financing additional roadway construction or operation of significant transit service in the suburbs. The solution has been general obligation bonds, with some pay-as-you-go construction. But many cities, including Charlotte, find most of their bonding capacity used up and must work in a climate of resistance to additional ad valorem taxation (although there is no arbitrary cap such as California's). Small towns face an even more critical problem, given the disparity in the scale of facility needs and their potential revenue, while, as noted above, counties in North Carolina cannot participate at all.

While the peculiarities of North Carolina's circumstances may not generalize well to other city and state situations across the country, the point nevertheless remains that cities and counties simply do not have the revenue sources required to construct or operate large transportation programs.

Increasing System Capacity

This strategy shares most of the difficulties of building new system capacity, but on a smaller scale. Certainly, if Charlotte has pursued any of the strategies listed here, this is the one which has been the most active. The city has enjoyed considerable success through operational improvements to increase capacity at intersections, add lanes at critical points in the system, and judiciously expand its transit service. This is a "more bang for our bucks" strategy, providing marginal improvements to the existing system. But like building new capacity, it is expensive, and there are the complications of work outside city boundaries and in suburban municipalities.

Coordinating Development With Transportation Planning

This strategy is potentially the most rewarding for cities such as Charlotte. Many cities, particularly across the Sun Belt, still operate in a context where development and growth

are regarded positively. North Carolina only recently has begun to grant local governments the power to impose impact fees, but Charlotte has used the limited powers that it has available, along with negotiation, to facilitate the construction of additional capacity through right of way reservation and actual construction. Mecklenburg County has been able to protect some right of way and negotiate construction. In a few instances, smaller communities in the county are beginning to recognize the potential of both ordinances and negotiation. Unfortunately, like many jurisdictions across the country, North Carolina's local governments do not have the funds available to hold up their end of a bargain made with a developer.

Boiled down, Deakin's seven views and the potential solutions that can be inferred by some of them actually suggest:

- Pricing to reduce travel consumption
- Additional capacity
- Encouraging use of alternative modes
- New arrangements of land use, either to reduce consumption or stimulate a shift to transit

The first three of these also are applicable to one or more of the first three of the major problems cited earlier:

- Environmental quality
- Petroleum dependence
- Congestion and delay

The fourth solution, new arrangement of cities and the fourth problem, the changing nature of cities, are opposite sides of the same coin and may or may not contribute to the solution of the first three problems. To some extent, they appear to operate at cross-purposes; however, two difficulties remain--individual behavior and lack of vision.

Downs cites four individual values or preferences which, when realized, are counterproductive from a larger, societal point of view. Any solution to the problems brought about by the behavior flowing from these preferences *must* come from some change in the circumstances which make them not only attractive, but, in the main, rational. Road-use pricing or parking pricing, a change in housing policy, and massive investment in public transportation, alone or in concert, will change behavior because they will change the context in which individual decisions are made. But there is not yet the societal will to make the hard decisions they require.

Just as importantly, not only is there no consensus on these hard choices, but also there is no vision of what we as a society want our cities to be--if it is something other than what we are getting from Downs' four pillars. A strong central area is a goal, but we shop and work in the suburbs and wonder why the downtown area is dying. We extol the virtues of small stores and personal service, and shop at Wal-Mart. We want an "urban place," but we build and live in miniature versions of rural "estates."

Unfortunately, the conclusion is that unless we develop a vision around which consensus can be built *and* translate that consensus into decisions and actions that will change individual behavior, the course we are on will take us deeper into the consequences of the four problems.

And If That Doesn't Happen?

There may be some utility in separating the main problems into pieces.

For example, building additional road capacity can reduce congestion. It is expensive, in several ways, but it does help.

Clearly, if we burn less petroleum we will reduce one of the main contributors to the degradation of environmental quality and we will reduce our dependence. Certainly, the efforts underway to improve vehicle fuel efficiency, capture pollutants, and encourage transit and ride-sharing should continue. But they may not be enough and they may not be sustainable. Perhaps the electric automobile will be a catalyst, in combination with pricing. But the implied shift in the source of energy production is prodigious.

Finally, the clearest but perhaps the most difficult to understand conclusion is that there is no simple, neat, painless solution to the side-effects produced by our incorporation of the automobile as the major means of personal mobility. While we certainly cannot "do nothing," we must recognize that no single action is a cure-all; each of those on the current menu can have, at best, only a marginal effect.[4] Further actions not only must have a demonstrable effect on petroleum consumption, but they also must be effective in motivating--not mandating--change in consumer/voter behavior if they are to have a significant effect. Automobile use and petroleum consumption are simply too massive and ingrained to rely entirely on marginal measures.

Perhaps the greatest danger is that we will be complacent about the long-term effectiveness of some of the currently popular measures. □

Notes

1. Downs, Anthony, *The Need For A New Vision for the Development of Large U.S. Metropolitan Areas,* The Brookings Institution, Washington, D.C., 1989.

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Protecting Our Mobility: An Overview of Alternatives

Larry Allen

North Carolinians have had a long love affair with the automobile. A drive along Interstate 40 between Greensboro and Raleigh or along Interstates 85 and 77 connecting Kannapolis to Rock Hill, South Carolina, clearly illustrates how highway congestion has caused the long "honeymoon" with our cars to wane. North Carolina's major highways are filling up. Planners and others have helped create this problem through plans, zoning regulations, and development ordinances. Using these same tools, planners must find ways to resolve growing transportation problems.

What is Transportation?

Simply defined, transportation is a means of conveyance or travel from one place to another. The quality of that transportation network has meant the difference between success and failure of commercial districts, corporate office centers and communities. Transportation should support the mobility needs of all of a community's citizens regardless of age, income or physical capacity. Transportation includes personal automobiles, bicycles, buses, rail, air and pedestrian modes of transportation. One of the basic responsibilities of transportation planning today is to promote and maximize transportation opportunities by developing a system which integrates all of these modes of travel.

The Problem: A North Carolina Context

North Carolina is no longer recognized solely for its contributions to agriculture, but is now among the leading states in medical and technological research and in tourism. Growth of these sectors of the economic base has put an increasing demand on the transportation infrastructure. Cities have grown from "farm markets" to major employment centers, some with populations of over 300,000.

The recent 1990 census figures estimate North Carolina to be the eighth most populous state in the United States. The American Association of State Highway and Transportation Officials (AASHTO) published a report entitled "Going and Growing: An Overview of the Relationship Between Transportation and Growth in America." This report details the impacts of congestion and warns that, ". . . in the absence of increased investments [to improve transportation facilities], [congestion] may get three to four times worse by the year 2020."[1] Yet communities expect both the accommodation of urban growth and the maintenance of their accustomed lifestyle of convenience, without the associated costs. Long known as the "Good Roads State," North Carolina is one of the few states on the East Coast where tolls are not used for public roads.

North Carolina's cities continue to develop in sprawling suburban patterns and residents drive considerable distances from home to work in an attempt to maintain the quiet, placid lifestyle for which the state has long been known. Citizens hope to pay lower taxes than in the urban areas, though the resulting costs to the infrastructure and to the environment are exorbitant. Those added trips have decreased the life of roads and increased carbon monoxide in the atmosphere to dangerous levels.

While North Carolina is frighteningly dependent on foreign fuels, the state's residents rely upon the "independence" of their private automobiles. The quality of North Carolina's future can no longer afford this style of living. The potential threats of oil-controlling nations and the recent Middle East conflict have forced planners, environmentalists and politicians to realize that everyone has contributed to this prob-

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lem. With diminishing financial resources and a deteriorating transportation infrastructure, how can North Carolina face the multi-faceted challenge of preserving mobility? This will require the cooperation of everyone to solve, but how?

The beginning of peak-hour traffic delays at the Hawthorne curve on Interstate 40 in Winston-Salem.

Changing Our Ways

First, planners' attitudes and recommendations regarding transportation and land use must evolve. Recently, a greater emphasis has been placed on the relationship between transportation and the built environment. The size and density of projects and the degree to which land uses are segregated or commingled are closely related to the types of transportation modes that are recommended. Planners must recognize that decisions to allow large new residential developments in the hinterlands is a decision to increase traffic on already worn roadways and to further pollute existing neighborhoods and communities in their path to reach the employment centers.

In response to the negative environmental impacts caused by traffic congestion, the federal Clean Air Act Amendment of 1990 was ratified. It contains stringent, rigorously defined legislative mandates for addressing air quality and transportation issues. The Clean Air Act has an immediate and profound effect on transportation plans and programs in areas which have not met National Ambient Air Quality Standards for carbon monoxide, ozone and particulate matter. Congress has mandated that any projects built with federal funds or with approval from the U.S. DOT, must originate from transportation programs that are in conformity with the state implementation plan. The Clean Air Act will force planners to rethink the way people and goods should be transported. Widening roads may not always be an option. In San Francisco, the courts recently stopped the reconstruction of a road project based on the directive of the Clean Air Act. Various regions within North Carolina will likewise be forced to reduce the carbon monoxide and ozone emission levels.

Promoting multi-modal transportation would contribute strongly to reducing traffic congestion. This requires changing public attitudes. Put simply, North Carolinians need to stop driving so much.

There are other daily opportunities for planners to positively shape future mobility. Some of the solutions may be within the local scope of the comprehensive plan. What does the plan really say? One way to check the effectiveness of the comprehensive plan is to simulate build-out. The growth management element, economic development element and transportation element should support each other.

Reviewing Site Plans for Pedestrian and Transit Friendliness

Site planning and review processes in urban areas should provide for the needs of pedestrians by requiring sidewalks and/or greenways as essential parts of transportation systems. When approving site plans, the promotion of safety for the pedestrian should be paramount. Sidewalks and/or greenways help to decrease vehicle trips by promoting the lost custom of walking.

Since many of the corporate office parks are developed as planned unit developments, it is possible to encourage the developer to configure the structures closer to the street network so that offices may be served by public transportation. Pull-out bays, transit shelters, and wider intersection

Peak use of public transit in downtown Winston-Salem illustrates the need for amenities such as transit shelters.

Infill housing on the periphery of downtown Winston-Salem results in higher land use densities that help to make the provision of public transit more feasible.

radii can be required during this process. The local transit development plan can be used as the basis for requesting these amenities and design standards.

Parking Management Strategies

The current abundance of free or low-cost parking is one of the greatest deterrents to public or shared transportation. Some parking is needed, but the abundance of low-cost parking promotes automobile use by reducing the cost of driving. Parking management strategies can reduce single-occupant driving at specific employment sites, thereby improving environmental quality in urban areas. It is possible to invoke such strategies through development ordinances by requiring a maximum number of parking spaces instead of a minimum number. Before the construction of major commercial buildings, employers who agree to provide preferential parking spaces for vanpools and carpools should be given a reduction in the number of parking spaces required during the site planning process.

Development Configuration to Accommodate Public Transit

The configuration of many developments can hinder the efficient provision of transit service. The *Greensboro Transit Service Plan* acknowledged that:

> . . . growing employment [to] the west of the city and near the airport provides a particular challenge for transit services. Although the number of employees in this area is large and growing, the area is difficult to serve by transit. The office and industrial buildings in which people work have been sited in ways that do not easily accommodate transit. Buildings are far apart and typically set back from the road. As a result, buses would either have to make many long diversions to building entrances, or serve bus stops that are distant from those buildings.[2]

Review of site plans for corporate office parks, residential subdivisions, apartment complexes and institutional facilities, such as nursing homes, should include a review of the accessibility of the site to public transportation.

Land Use Plans

Planners should consider the degree to which new development can accommodate public transit during the preparation of plans for future growth. A successful system which offers several modes of transit depends upon a diverse and compact mix of land uses. Land uses influence the amount of ridership and determine the types of transit trips taken and the days of the week and times of the day of these trips. For example, office employees who work business hours have different travel requirements than hospital employees who work rotating shifts.

Transit works best when an appropriately high development density along a linear corridor is established. The Charlotte Department of Transportation completed the *Charlotte 2005 Transportation Plan: Transit Corridor Study* in 1989. The study assessed the long-term feasibility and demand for capital-intensive guideway transit in eight radial corridors within the city of Charlotte and Mecklenburg County. The study concluded that:

> . . . while guideway transit shows some promise in certain corridors, the land-use patterns and densities in the 2005 Generalized Land Plan generally do not support this concept of transit service. If light rail transit or any form of guideway transit is pursued in the future, the reshaping of development plans and policies to support higher-density corridor development and a strong Uptown area [Central Business District] must be an integral part of such an effort.[3]

For example, the best location to provide express bus service is between major traffic-generating land uses with a

Vanpools offer commuters an alternative to the private automobile.

balance of residential areas and employment centers. Many municipalities within this state and nationally are experimenting with the concept of activity centers. Although activity centers may specialize in certain types of land use (for example, a major medical complex), most activity centers integrate employment, residential and commercial uses. The concept of activity centers is a rediscovery of the Garden City and New Town-in-Town approach to planning. Activity centers will probably become an answer for reducing the vehicle miles of travel, thereby improving air quality.

Removing the Stigma From Public Transportation

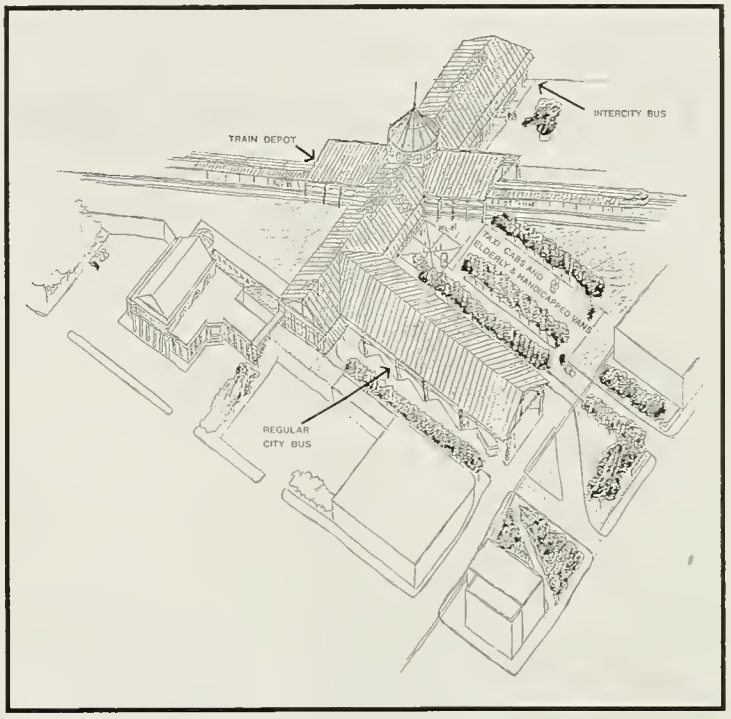
Planners should be at the forefront of removing the stigma which encourages the notion that public transportation is primarily for use by citizens of certain socio-economic backgrounds, age groups, or for the handicapped. As part of the transportation network, planners should advocate public transit as a viable alternative to the automobile for all people. Public transportation is not restricted to public buses but includes carpools, shared and exclusive right-of-way transit, such as High Occupancy Vehicle (HOV) lanes on highways, transitways, commuter rail, light rail and heavy rail.

Federal, State and Local Initiatives

President Bush recently introduced a five-year, $105 billion proposal to increase spending on highways and transit nationwide. The president's plan calls for the widening of existing roadway facilities instead of building an abundance of new facilities. Across the country, new strategies for combatting congestion are being developed, such as the use of telecommunications and intelligent vehicle/highway systems. The purpose of the intelligent vehicle/highway system is to decrease the distance safely needed between vehicles sharing a roadway and to help motorists avoid congested areas. Telecommuting would allow employees to remain at home by enabling them to transfer work to their offices via computer modem.

In North Carolina, the state's Department of Transportation has proposed to acquire and restore railroad corridors within the state. The city of Greensboro recently acquired the public transit system from Duke Power Company and has proceeded to build the first multi-modal transit center in North Carolina. It will house intercity bus service and the Carolinian Commuter Rail Service, which provides daily rail service between Rocky Mount and Charlotte, N.C.

In the Triangle, the Land Use Subcommittee of the Joint Greater Raleigh-Durham-Chapel Hill-Carrboro Transportation Advisory Committee recently completed the *Transit and Land Use Study* as part of its regional mobility initiatives. In the Triad, the Joint Transportation Advisory Committee of Greensboro, High Point and Winston-Salem urban areas meet routinely to address transportation issues of regional concern. They hosted a conference entitled "Air Quality in the Carolinas" in June 1991.



Proposed multimodal transit center for the city of Greensboro.

Shaping the Future

Communication and coordination among the various planning disciplines, including land use, transportation and environmental planning, must be maintained. The police powers, conferred to planners by the state to protect the health, safety and welfare of citizens in communities, provide the foundation that makes planners responsible for evaluating all the possible alternatives for protecting mobility--a necessity for economic livelihood.

Our love affair with the automobile must come to an end. Our roads require it. Our budget resources demand it. The quality of our air compels it. Planning must be a part of the solution rather than an excuse for the problem. □

Notes

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Freight Transportation: Preserving the Rail Service Option

Pamela R. Davis

In 1990, approximately 101 million tons of freight were hauled by railroads in North Carolina. Because rail service is required by many of the state's basic industries, there is a need to support an adequate and efficient railroad system.

Although railroads are crucial to the transportation requirements of many of North Carolina's industries, the state's rail system miles have been shrinking at an alarming rate. Many factors have contributed to the poor financial health of the railroad industry. These factors include poor labor productivity due to inefficient work rules, loss of revenue base to trucking competitors, poor investment decisions, government subsidies of competing modes and government regulation.

The Importance of Rail Transport to North Carolina

Many of North Carolina's basic industries use rail transportation to transport commodities from medium to long distances because of its relatively low cost and its ability to transport certain types of commodities efficiently.

Railroads are particularly suitable for the transportation of bulk commodities such as coal and grain because they can haul huge volumes of freight in long multi-car trains efficiently and economically. Chemicals and hazardous materials are often transported in railroad tank cars because they provide armor-type protection. Railroads are also commonly used to transport commodities that are simply too large or too heavy to ship by truck. Although railroads are predominantly used to carry raw materials and oversized items, they are also used to transport many other manufactured products such as automobiles, paper products and canned goods.

Many industries use rail service because it is the least costly transportation option and the only one that permits them to keep operating costs at accepted levels and allow a reasonable profit. For other industries, the availability of railroad service is critical because other transportation alternatives cannot meet their particular shipping needs.

The largest industrial users of rail service in North Carolina are coal-fired public utilities, which receive large bulk shipments of coal. North Carolina's agricultural industries also commonly use rail to haul grain, fertilizer and feed. Many of the state's logging companies rely upon railroads to transport timber and wood chips to saw and paper mills. In addition, many of North Carolina's construction companies regularly use rail service to receive building materials such as sand, stone, concrete and glass.

Norfolk Southern Corporation and CSX Transportation (CSX), two of the nation's largest and most successful railroads, predominate in North Carolina. These companies operate over 95 percent of the rail system. In 1990, Norfolk Southern Corporation operated 1,560 rail miles while CSX operated 1,178 rail miles in North Carolina. More than 800 miles that are operated by small or "short line" railroads remain. Many of these smaller railroad companies have been in business for decades and are an important part of the state's transportation infrastructure.

Rail Line Abandonment

Since 1980, both Norfolk Southern and CSX have initiated programs to streamline their rail networks and to abandon

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unprofitable track. This streamlining is part of a national trend to restructure facilities and services in order to improve the poor economic performance of the railroad industry. These financial difficulties were severe in the early 1970s and resulted in the bankruptcy and subsequent reorganization of some of the nation's largest railroads.

North Carolina has been hit hard by abandonment because of its large number of rural branch lines with light to moderate traffic density. Over the past ten years more than 500 miles of track have been abandoned. This is an average of approximately fifty miles per year.

Rail service abandonments have affected almost every county in North Carolina and hundreds of businesses and communities. The immediate impact of branch line abandonment is on rail shippers. The response of a particular business to rail service abandonment will depend on how increased transportation costs will ultimately affect their operations, income and profit. The most drastic response to abandonment is the closing or relocation of a business. Other responses are to curtail production, lay off workers, and halt future expansion and job hiring.

Counties and local governments have strongly resisted any abandonment of railroad service that would adversely impact local industry or result in the loss of opportunity to attract new rail-oriented development. Recognizing the community impacts that may result from railroad abandonment, the General Assembly has authorized the North Carolina Department of Transportation to use state and federal funds to assist communities and shippers in preserving critically needed rail service.

Alternatives to Rail Line Abandonment

North Carolina has actively helped communities deal with and find alternatives to abandonment. Railroad abandonment increased in the early 1980s, and the state actively opposed these abandonments with the Interstate Commerce Commission (ICC). Unfortunately, protesting only helped to delay an abandonment, rather than prevent it. Past economic turmoil in the railroad industry heavily influenced the ICC's decisions in abandonment cases. The ICC views restructuring and abandonment as a means to help the railroad industry improve its economic performance.

Although protesting with the ICC was not effective, a variety of other strategies have been used that were more successful. The best strategies include establishment of a short line railroad, track rehabilitation, rail service marketing, and rail operating subsidy. Each approach has been widely accepted by both railroads and shippers, and has been used successfully in North Carolina.

Short Line Railroads

The establishment of a short line railroad is one alternative to termination of service. In the United States, hundreds of new short line railroad companies have formed to take over lines abandoned or spun off by the major systems.

A short line is a local railroad that collects and distributes local freight traffic and interchanges it with the primary interstate railroads that make up the national railroad system. Short lines perform this "switching" service for a small portion of the overall per car revenue. Approximately fifteen percent of revenues obtained by major railroads come from freight interchanged with short line railroads. These railroads are typically less than 100 miles long. This is a relatively short distance when compared to the many thousands of miles operated by the major railroads. These small railroads are usually welcomed by the major railroads because they perform time-consuming and expensive local switching, and allow the major railroad to focus on their long-haul transportation operation.

A short line railroad usually offers comparable or better rail service than a major system and has lower operating costs. This is because these operations have a two-man crew rather than the normal four-man crew. They are not usually bound by railroad industry labor agreements; hence, they are often able to employ labor at prevailing local wage rates. Short line managers also usually have more flexibility in the use of labor. They have lower overhead costs and closer contact with shippers.

Fifteen new short lines have been established in North Carolina since 1980. Of these, eleven were formed as an alternative to abandonment. In 1984, CSX proposed abandonment of twelve miles of track between Red Springs and Parkton in Robeson County. The county and the town of Red Springs strongly opposed the abandonment because of the anticipated adverse impacts on local shippers and economic development. After extensive negotiations with CSX, Advancement Incorporated, a five-county regional economic development organization, purchased these tracks and leased them to the Laurinburg and Southern Railroad (LRS) to operate. An LRS subsidiary company called the Red Springs and Northern Railroad now operates the track.

In 1987, CSX proposed the abandonment of 5.7 miles of track between Dunn and Erwin in Harnett County. Burlington Industries, an Erwin textile company dependent on rail transport, unsuccessfully protested the abandonment and subsequently solicited private proposals to buy and operate the track. The Aberdeen and Rockfish Railroad purchased the track from CSX and established short line service.

In an unprecedented move in July 1988, the state of North Carolina purchased 67 miles of track between Dillsboro and Murphy to avoid a proposed abandonment. The shippers and communities served by this track strongly protested the proposed abandonment of service, but were unable to finance purchase of the track. The state purchased the track for $650,000, and leased it to the Great Smoky Mountains Railway (GSMR) for a 25-year lease period. Although freight traffic on the track has remained light, the GSMR operates passenger excursion trains which provide most of their revenues. In 1990, approximately 164,000 passengers rode the GSMR.

The success of a short line railroad depends on many factors. Like any small business, the most important indicator of potential success or failure is the projected revenues compared to the anticipated cost of operation. Unless a short line railroad lowers previous operating costs through good management of personnel and improves the line's former traffic base, it is doubtful whether a new operator can succeed where the previous one failed. The decision for continuation of service should be based on economic justification stemming from the need to preserve a needed service rather than on shipper or community desire to retain a nonessential service.

Although any public or private party can purchase a railroad, it is usually operated by a firm that specializes in such operations. Short line firms aggressively compete to operate those short lines with a projected good rate of return and may not indicate any interest at all in more risky ventures. Tracks with carloads of a hundred cars or more per mile are considered to be excellent prospects for short line operation. Tracks with less than twenty cars per mile probably have too few cars to operate profitably.

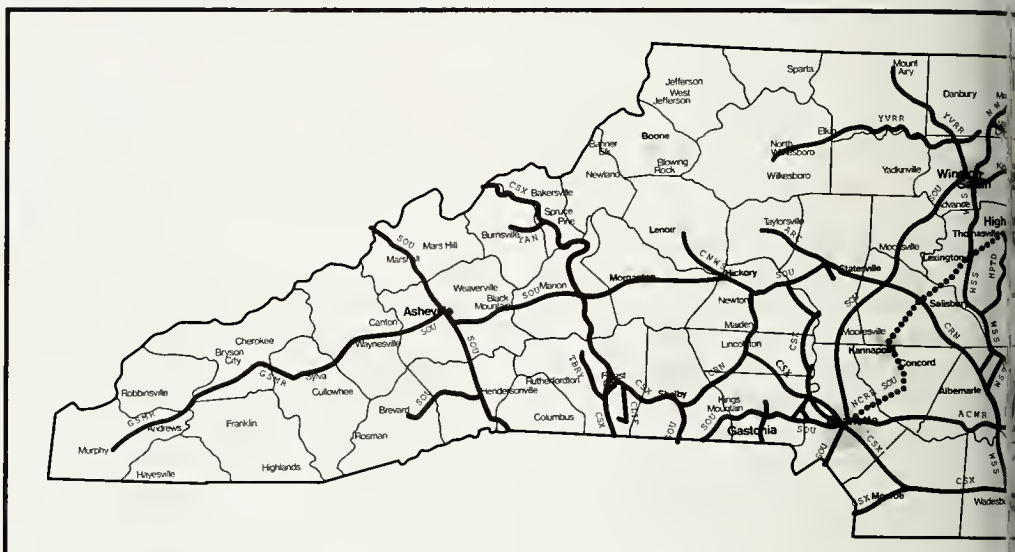
A short line operator will assume responsibility for most areas critical to a short line's success. They will handle rate negotiations, marketing, train operations, and track maintenance. A short line operator should be competent and experienced in the various aspects of railroad management.

The purchase price of rail track is normally the sum of its net liquidation value and right-of-way costs. The liquidation value usually consists of the fair market or salvage value of track materials minus the costs of track removal. The liquidation value of the track will depend on a number of factors, including weight and condition of rail, condition of other parts of the track (crossties, roadbed, ballast), and profitability.

The costs of the right-of-way underlying the track depend on local property values and the amount of acreage held in fee. Right-of-way held in easement is typically transferred at no cost as long as it remains in railroad use.

The risk of investing in the purchase of railroad track is partially offset by its collateral value. It is advisable to have an appraisal of both track and property values, as well as a title search on the property in order to assist with price negotiations.

Once a track is purchased, major rehabilitation work on the track is the responsibility of the owners. This cost can be prohibitive if the original owner has deferred maintenance in anticipation of eventual abandonment. It is important to have a competent railroad track engineer thoroughly investigate the condition of the track and consider the costs of rehabilitation before investing.



AAR CODE	RAILROAD NAME
ACWR	Aberdeen Carolina and Western Railway
AEC	Atlantic and East Carolina Railway
AR	Aberdeen and Rockfish Railroad
ARC	Alexander Railroad
ATW	Atlantic and Western Railway
BMH	Beaufort and Morehead Railroad
CARR	Chesapeake and Albemarle Railroad
CFR	Cape Fear Railways
CLIF	Cliffside Railroad
CLNA	Carolina Coastal
CNWS	Carolina and Northwestern Railroad
CPLJ	Camp Lejeune Railroad
CRIJ	Carolina Rail Services
CRN	Carolina And Northwestern Railway
CSX	CSX Transportation
DER	Dunn-Erwin Railway
GSMR	Great Smoky Monntains Railway
HPTD	High Point, Thomasville & Denton Railroad
LRS	Laurinhnrg and Southern Railroad
MRR	Mid Atlantic Railroad
NCDOT	North Carolina Department of Transportation
NCRR	North Carolina Railroad Company
NCVA	North Carolina and Virginia Railroad
NCYR	Nash Conuty Railroad
NW	Norfolk and Western Railroad
RSNR	Red Springs and Northern Railroad
SOU	Southern Railway System
SUR	State University Railroad
TBRY	Thermal Belt Railway
US	US Army to Sunny Point Terminal
WSS	Winston-Salem Southbound Railway
WTRY	Wilmington Terminal Railroad
YVRR	Yadkin Valley Railroad

Legend

Existing Rail Lin
North Carolina
Preserved Rail C

Branch Line Rehabilitation

Many railroads operate over tracks which are in poor condition due to inadequate maintenance. As mentioned previously, a major company may defer making maintenance expenditures on a track it anticipates abandoning. Some short lines will also reduce their spending on maintenance when revenues are inadequate. Some short lines also find it difficult to generate sufficient excess revenues to replace or repair major items, such as bridges, tunnels, and rail, because the costs are prohibitive.

When major track rehabilitation is needed but the owning railroad cannot afford the repairs, interested parties may consider providing assistance to finance the necessary track improvements.

When assistance is provided, an abandonment can often be avoided and the efficiency of service improved. For the railroad, a rehabilitation investment may result in lower operating costs, improvements in safety, new business and ultimately a more financially viable short line operation. Several track rehabilitation projects have been undertaken in North Carolina, allowing for continued and improved railroad service.

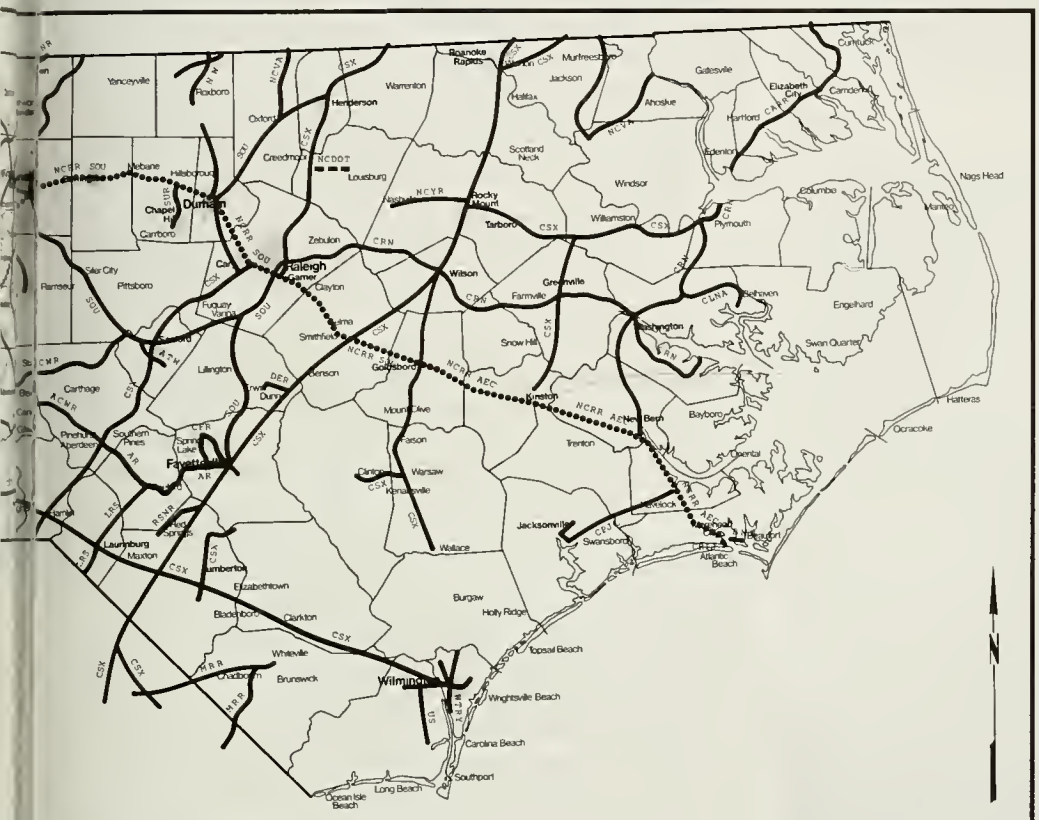
The 34-mile Star to Aberdeen track was studied for abandonment by Norfolk Southern in 1983 and sold to a private investor. The original short line was named the Aberdeen and Briarpatch Railroad.

It was later resold to a private investor and renamed the Aberdeen, Carolina and Western Railway (ACW). The ACW Railroad inherited a track that was in very poor condition, and lacked crossties and ballast. The railroad undertook a major rehabilitation using funds provided by the state and the Federal Railroad Administration (FRA). Because of ACW's aggressive marketing, traffic on the line has since grown considerably, from 800 carloads per year in 1987 to 5,200 annually in 1990.

The nineteen-mile Spring Hope to Rocky Mount line serves a variety of shippers including Masonite, Union Camp, Louisiana Pacific, and Spring Hope Rockwool Company. The track was proposed for abandonment in 1985 by CSX and subsequently sold to LRS Railroad. The state is currently assisting in a major program to replace crossties and ballast and repair road crossings. Since this effort began, traffic on the line has increased by an average of 1,500 carloads annually over CSX traffic levels.

Although both tracks were purchased privately, rehabilitation funding was not forthcoming from private sources, since the cost to both purchase and rehabilitate these tracks privately could not be justified based on the return on investment. A public investment guaranteed continued service for local businesses.

A rehabilitation investment is usually designed to upgrade the track



h Carolina Railroad System
1991

d Right-of-Way
r (Tracks Removed)

Public Transportation & Rail Division
North Carolina Department of Transportation
P.O. Box 25201 Raleigh, NC 27611-5201

to minimum safety standards established by the Federal Railroad Administration. A typical rehabilitation project includes replacement of defective cross-ties, addition of ballast, adjustment of distance between rails to ensure an even gauge, and tamping, to tuck the stone ballast securely between and under cross-ties. FRA specifies the minimum standards for track quality depending on the maximum allowable speed standards. If a section of railroad does not meet all requirements for its intended class, it is reclassified in the next lowest class for which it does meet the requirements. Because of their low volumes, most short lines require maintenance at Class 1 (allows speeds up to 10-15 m.p.h.) or Class 2 (allows speeds up to 25-30 m.p.h.). After a rehabilitation investment is made, the railroad is required to maintain the track at the rehabilitated level for a specified time period, which is typically ten years.

Branch Line Marketing

In the past, marketing of light density tracks has been the responsibility of the major railroad systems. Railroad marketing efforts are typically much less active on these low volume tracks because they provide a relatively poor rate of return on investment when compared to higher volume routes. Many major railroads believe that the labor and equipment resources devoted to these lines are utilized more effectively on the more profitable parts of their railroad system. Because low-density tracks are often inadequately marketed by the operating railroad, communities can often serve a useful role by encouraging the use of light-density lines that are important to their area.

An important aspect of marketing is the process of becoming familiar with the status of local rail service and developing ways to monitor the performance of local rail service providers. Rail shippers are a prime source of information about the status of rail line service. In North Carolina, the Department of Transportation also provides information. Information useful to develop an inventory of railroad service includes the volume of traffic carried, a list of users, number of people employed, and the general level of service and maintenance.

The Great Smoky Mountains Railway operates passenger excursion trains on its short line to offset a light amount of freight traffic.

For tracks with densities under 500,000 annual gross tons per mile, concerned parties should conduct individual shipper surveys and ask about current and projected rail use, shipper satisfaction with rail service, and shipper recommendations for improvement. Inventories and shipper surveys should be kept up to date to allow adequate planning.

A more detailed marketing study evaluates the financial status of rail service and makes recommendations regarding its future. This type of marketing study has been conducted in North Carolina. In 1989, at the request of Caldwell and Catawba Counties, the Department of Transportation and Norfolk Southern Railroad studied the status of Norfolk Southern's railroad service between Lenoir and Hickory. The service's marginal profits made an abandonment likely but the company realized the potential to convert service to a short line operation. Norfolk Southern subsequently leased the track to Rail Tex, a firm specializing in short line operations.

Aggressive marketing strategies targeted at industrial prospects include advertising the availability of railroad service and providing information to prospects about rail-served sites. Sites abutting a track should be appropriately zoned as industrial or commercial, and have water, sewer and electric service available.

It is beneficial for local governments, shippers, economic development councils and other interested parties to maintain a good, ongoing communication and relationship with rail service providers. Railroads can provide useful information about the status of rail service and their cooperation is needed to implement almost any rail project. It is important for interested parties to clearly indicate to the railroad a strong desire to retain and improve rail service and to express a desire to stay informed and work cooperatively on solutions.

A North Carolina community worked directly with a railroad to retain service lines threatened by abandonment. In 1985, CSX placed the line between Clinton and Warsaw on its System Diagram, a map indicating future abandonment plans. The county and shippers negotiated with the railroad to retain railroad service by making improvements in the net profit of the tracks. These tracks were eventually taken off the Railroad System Diagram Map.

Subsidies

A railroad may continue to serve even an unprofitable track if it is offered an opportunity to recoup some or all operating losses. Subsidizing the costs of railroad service is a way of providing incentive to the railroad to continue providing a service that would probably otherwise be discontinued.

A subsidy is best used in the short term to help minimize

or eliminate losses while simultaneously pursuing a program to improve profits. This approach has been used in North Carolina to prevent abandonment of critically needed rail service. In 1989, Norfolk Southern abandoned twelve miles of track in Rutherford County. This service was needed by several industries which had few viable transportation alternatives.

Rutherford County and the state provided funding to the Rutherford Railroad Development Corporation to purchase the track and lease it to a short line operator. Although there are prospects for increased traffic, the existing traffic base is very low. The Thermal Belt Railway leases the track from the Rutherford Railroad Development Corporation and has imposed a per car surcharge in order to provide adequate revenue. The current freight charge is still lower than the costs to shippers of switching to truck use.

Several forms of subsidy are possible and include:

1. *Guaranteed Shipments.* Shippers agree to ship and receive a specified number of carloads.
2. *Prepaid Shipments.* Shippers advance payment to the railroad, which is calculated to cover any deficit.
3. *Surcharge.* Shippers pay additional charges for each carload originating or terminating on the branch line.

Sources of Project Funding

Funding rail preservation is a significant challenge because it often requires a large investment. A variety of funding mechanisms have been successfully used.

Federal Railroad Administration

The Federal Railroad Administration (FRA) offers each state the opportunity to participate in the Local Freight Assistance Program (LRFA). The North Carolina Department of Transportation (NCDOT) has been designated by FRA as the state agency responsible for receiving and administering LRFA grant funding. The NCDOT receives a $36,000 entitlement each year to be used for either rail planning or projects. FRA also offers states the opportunity to apply for discretionary grants. Eligible projects include rail rehabilitation, track purchase and capital improvements.

FRA requires states to provide at least thirty percent of total costs in rehabilitation projects and fifty percent in acquisition projects. The agency considers the benefit/cost ratio of the project and the state's abandonment activity to make grant awards. The FRA announces funding availability each year. North Carolina has received three discretionary grants that total $850,000 in the past five years. These funds were used to rehabilitate the tracks of three short lines.

State of North Carolina

Starting in 1980, the state has provided the North Carolina Department of Transportation funds to match federal rail project grant funding. As these federal funds have dwindled, state funds have become a primary source of rail project funding.

State grants for railroad revitalization are provided in the amount of fifty percent of total project costs. Since 1980, the department has funded eleven railroad revitalization projects. The department's funding comes from stock dividends paid from state ownership of stock in the North Carolina Railroad Company (NCRR). The NCRR owns the track between Charlotte and Morehead City, which it leases to Norfolk Southern Railroad.

Local Government

Some local governments also provide financing to preserve, improve or market local railroad service. They are most apt to get involved on the behalf of local industry, or when rail service is important to local economic development.

In North Carolina, local governments have usually assisted in planning, rather than funding rail projects. An exception is Rutherford County, which provided funding to help a non-profit community group purchase twelve miles of track abandoned by Norfolk Southern Railroad, and lease it to a short line operator. Robeson County also provided funds to a regional group to purchase twelve miles of track abandoned by CSX. The regional group leased the track to a new short line railroad.

Shippers

Ideally, shippers should provide at least some of the financing needed to preserve local railroad service since they benefit most directly from continued or improved service. When shippers have some funds at risk they are more apt to support a project. Shippers often provide a part of the funding needed to buy or rehabilitate rail track. They may also subsidize rail service operations, or commit to a specified level of use.

In North Carolina, shippers have made significant contributions to preserve rail service. Shippers provided part of the funding to purchase 67 miles of abandoned track purchased by the state and leased to the Great Smoky Mountains Railway. Shippers using the five-mile track from Jacksonville to Kellum helped to fund a joint effort by the NCDOT and Norfolk Southern to rehabilitate the track.

Class III Railroads

Class III Railroads (unrelated to the track maintenance classifications cited earlier) are defined by the Interstate Commerce Commission as those railroads that generate revenues of less than $10 million per year. All of the state's short lines are Class III Railroads. Several of these short line railroads have become directly involved in purchasing track abandoned or sold by the major railroad systems.

In North Carolina, the Laurinburg and Southern Railroad and the Aberdeen and Rockfish Railroad provided financing

NCDOT track inspector Pasquale Vendettvoli checks tracks for safety.

to buy tracks they now own and operate. The Laurinburg and Southern Railroad purchased the nineteen-mile Nash County Railroad, which had been studied for abandonment by CSX in 1985. The LRS provided funds to match a federal FRA grant for rehabilitation. The LRS also helped to provide funds to match a federal grant to rehabilitate the twelve-mile Red Springs and Northern Railroad, currently operated by LRS and owned by Advancement Incorporated, a nonprofit regional organization.

The Aberdeen and Rockfish Railroad purchased the five miles of track between Dunn and Erwin from CSX to avoid abandonment and also provided funds to match a state grant to help rehabilitate the track.

Several out-of-state short line management firms have also made private investments in North Carolina's growing short line industry. Rail Tex purchased the track between Boykins, Virginia and Tunis, N.C. when CSX announced its intent to sell the track in 1988. Rail Tex is one of the largest and most successful short line management firms in the United States. The North Carolina and Virginia Railroad (NCVA) is owned by Rail Tex and has since committed to participate in joint effort with the N.C. Department of Transportation to rehabilitate a deteriorating railroad bridge on the NCVA.

Private Entrepreneurship

Private entrepreneurs also invest in establishing new short lines. The former CSX tracks from Chadbourn, N.C. to Conway, S.C., and from Whiteville, N.C. to Mullins, S.C., were purchased from CSX in 1987 by a North Carolina businessman. The former Southern Railroad (SOU) track from Star to Aberdeen was also purchased from the former private owner in 1987 by a Michigan businessman.

Private investors usually have a high interest in railroad transportation, have the capability to provide adequate financing, and are willing to incur substantial risk. More traditional investors, such as venture capital firms and banks, are typically reluctant to invest in rail projects because of unfamiliarity with railroad transportation, and because it is a high risk investment that does not provide the high rate of return many of these investors require.

Elements of a Successful Program

Several key steps are important to successfully implement a rail preservation project. Someone must assume leadership; typically a railroad, shipper, shipper group, economic development agency, local government, or state government might assume this leadership.

The next step is to begin to form key public/private partnerships. Generally, these partnerships will consist of the railroad, shippers, local government and the community. The success of any alternative will almost always depend on the full cooperation and commitment of all of these parties. It is important to inform key public officials and obtain their support. These individuals often help obtain public financing. They also influence shipper decisions to use railroad service.

It is important to thoroughly evaluate alternatives prior to implementing a rail preservation project. A feasibility study should be conducted to evaluate the potential success of a new short line. A marketing study should be used to identify service problems and solutions. It also identifies ways to increase branch line revenues. An engineering study should be conducted to determine the condition of the track and rehabilitation needs and costs. Detailed analyses are the only way to provide sufficient information to evaluate and implement alternatives.

To conduct research regarding alternatives to preserve rail service, there is no need to start from "ground zero." There are publications available that deal with the subject. The North Carolina Department of Transportation can also provide guidance. North Carolina communities that have already faced the challenge of preserving their rail service can also provide information.

Finally, once a project is undertaken, it is important to conduct follow-up monitoring to ensure that the project continues to meet objectives. Feedback obtained should be available to involved parties to help address new concerns and new opportunities.

Rail transportation is actively used by many North Carolina businesses and serves as an important, although often ignored transportation alternative to highway trucking. Greater awareness and the use of existing planning strategies can help to preserve the rail option for businesses which need it, and to enhance local economic development. □

Growth Management and Transportation: The Florida Experience

James Charlier

Over five years have passed since Florida enacted its landmark growth management law. In that time, Florida planners and public officials have gained some hard-earned experience in the practical aspects of implementing a statewide growth management program. As expected, transportation issues have been at the forefront of the growth policy debates during this "shakedown" period.

One of the primary motivating factors that led Florida to pursue its ambitious growth management program in the first place was a general public dissatisfaction with the traffic and highway congestion that accompanied the state's surging growth during the 1970s and 1980s. It now appears that some of these issues may not be easily resolved as state and local governments wrestle with the complex and competing needs and demands of this booming Sunbelt state. However, Floridians are gaining a better understanding of the nature of the transportation challenge and, as a result, are beginning to rethink some of their original assumptions about growth and mobility.

Florida Population Trends

In 1950, Florida was a quiet rural state with a population of only 2.8 million, about as many people as lived in Iowa at that time on about the same land area. Thirty years later, in 1980, the state's population had more than tripled to 9.7 million.

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During the 1980s, Florida's population grew by about 900 people daily. Annually, the state was adding 350,000 (net) new residents, roughly equivalent to adding a new city the size of Tampa every year. By 1990, Miami had become the financial capital of the Caribbean, Orlando had become the tourist capital of North America, and over 13 million people resided in what had become the nation's fourth largest state.

Forecasters predict 16 million people will call Florida home by the end of the century. The conservative projection for 2010 is 18 million, which will make the Sunshine State the nation's third largest, after California and Texas.

More important, however, than the amount of population growth has been the pattern of new development occurring over the past thirty years. Most of the population has settled in the state's urban counties, where 80 percent of Floridians now live. These counties are generally located in the state's coastal areas. In fact, of the six Florida "second tier" cities (urban area population over one million), only Orlando is located in the interior.[1]

While development has occurred along the coast in urban counties, most of the growth--both in population and in employment--has been suburban in nature. Four out of five new jobs created in Florida during the 1980s was in a suburban location. From 1980 to 1990, the population of Florida's unincorporated areas grew by nearly twice the rate that the population of incorporated areas grew. As a result, the gross density of the state's urban counties has declined steadily and only one CBD in Florida has reached 100,000 employment (Miami).

Florida Transportation Trends

Obviously, this rapid population growth has placed tremendous demands on Florida's transportation system. Attempting to keep up with these demands has strained the

financial resources and institutional arrangements of state and local government. Although this could be said about many kinds of public infrastructure--drainage, potable water, solid waste disposal, schools, etc.--it has been the transportation issues that have tended to frame the growth management debate in Florida.

Highways

As rapid as Florida's population growth has been, it has been exceeded by the growth in highway traffic. The increasing population combined with increasing automobile ownership have led to annual new auto registrations equivalent to a 1,300-mile, bumper-to-bumper line of cars entering the state each year.

It is important to recognize that the traffic growth on Florida's highways is not entirely attributable to population growth. Florida's population grew by 34 percent between 1980 and 1990, but total highway travel in the state increased by over 50 percent during that same period. Travel on some sections of the state's interstate highway system has more than doubled during the past decade, a trend that cannot be entirely explained by population increases.

What are the factors contributing to traffic growth, other than population? A partial list would include (with 1980 to 1990 trends):

- Number of licensed drivers (up 41 percent)
- Per capita automobile ownership (up 9 percent)
- Total employment (up 35 percent)
- Number of households (up 37 percent)

Other more difficult to measure "travel behavior" trends also are influencing the traffic growth in Florida's cities. More people are driving, people are making more auto trips each day, they are making more of these trips alone in their cars, and they are driving farther on the average trip. An economist might say Floridians are consuming more transportation (how much they travel), and they are doing it less efficiently (how they travel), than ever before.

Over the past thirty years, Florida has responded to its traffic growth with an aggressive road-building program. The 1,400-mile interstate highway system is nearly completed. The Florida Turnpike--"Florida's Main Street"--which runs down the spine of the state to Miami, has been extended around the west side of Miami to Homestead, providing a direct gateway to the Keys.

Several of Florida's major cities have turned to toll roads as a means of providing multi-lane capacity. The state has actively encouraged this by establishing expressway authorities with broad authority to act as virtually independent state agencies. Jacksonville built many of its river crossings and developed an extensive expressway system with toll financing in the 1960s and 1970s. Tampa, Miami, Ft. Lauderdale and Orlando all have many miles of high-capacity toll expressways. During the 1970s the state of Florida was adding over 300 lane miles of new state highways each year.

However, in spite of the road-building efforts of local and state government, Florida has not been able to keep up with traffic growth. By 1985, the pace of new state highway construction had slowed to about 100 lane miles each year. During the latter part of the decade, the Florida Department of Transportation pursued an objective of building at least one lane mile of new highway capacity for every three lane miles of estimated new traffic demand. While this may seem a modest objective, the DOT estimated that, due to funding constraints, it was actually adding only about one lane for every five lane miles of new traffic demand. The DOT now estimates that over 50 percent of the lane miles of state highways are "congested," with the percentage in some urban counties even higher.

Public Transit

Florida's public transit systems have not grown with the state. Annual ridership on public transit in 1980 was 147 million passengers. By 1990, this had dropped to 143 million. Many of the state's cities have relatively underdeveloped transit systems. Orlando, for example, with an urban area population of over 1.2 million, has a fleet of only 100 buses. High capacity guideway transit systems have been developed in Miami and Jacksonville, but have not moved past conceptual planning stages in other Florida cities.

The state's only commuter rail system, Tri-Rail in Dade, Broward and Palm Beach Counties has disappointed its sponsors with ridership of fewer than 5,000 weekday passengers. A state-sponsored intercity rail experiment, the Silver Palm, which provided daily Amtrak service between Tampa, Orlando and Miami in the mid-1980s was discontinued in 1986 when it failed to achieve the statutorily-mandated 60 percent farebox return. The Florida High Speed Rail Project, which was originally planned to provide service between Tampa, Orlando and Miami by 1995, has been scaled back and may be postponed indefinitely.

Aviation

Florida's airports have benefited directly from the twin boom in tourism and population. Orlando, in particular, has thrived, as the Disney complex and other Central Florida tourist attractions have achieved a steady record of double-digit annual growth in visitors. Orlando International Airport saw 18 million passengers in 1990, an increase of 280 percent over 1980.

While the major airports have managed to achieve capacity expansions in response to increasing demand, the ground access to these airports has not kept pace. Most of the state's large airports are now actively pursuing some sort of high-capacity transit service as a means of meeting this need. In Orlando, for example, a number of major ground access systems are in planning stages. These include the Magnetic Levitation Demonstration Project, the Florida High Speed

Rail Project (now in question) and a proposed rail link with Port Canaveral on the east coast. Ft. Lauderdale, Tampa and Miami are also planning fixed guideway airport access systems.

The Early Growth Management Legislation

Florida began its growth management efforts early, with sweeping legislation passed in 1972. That year the state embarked on a program of state comprehensive planning, began identifying areas of critical state concern, and adopted a far-reaching Water Resources Act. Three years later, in 1975, the state imposed mandatory local growth management planning on its cities and counties.[2]

Of the several bills adopted in 1972, the one with the most lasting impact on transportation planning was the Environmental Land and Water Management Act (Chapter 380, Florida Statutes) which established a process for evaluating "developments of regional impact" (DRI). The DRI law established an extensive development approval process involving regional and state review of projects that would impact citizens of more than one county. Basically, this imposed a more-than-local evaluation on large proposed developments including shopping malls, office parks and subdivisions.

Under Chapter 380, development review of DRI projects is provided through regional planning councils and state oversight is provided by the state's land planning agency, the Department of Community Affairs. A system of impact thresholds is used to determine what constitutes DRI projects. Developers prepare written responses to a series of thirty-two questions designed to compare their proposed projects against these thresholds. Projects which qualify as DRIs must then be subjected to the extensive review and approval process.

Although Chapter 380 requires a thorough review of a wide range of impacts, highway traffic (question 31) has been the principal issue for most DRI projects, with environmental impacts (wildlife habitat, wetlands) a close second. The DRI statute has had several positive effects on transportation planning since the mid-1970s. First, it has exposed the traffic impacts of proposed large projects to intensive review by local planners, thereby providing the information needed to impose impact fees, site-specific exactions and project design requirements and conditions. It could be argued that the widespread use of impact fees by Florida local governments (not only on DRI projects, but on all types of new development) has been facilitated in part by the amount and quality of data made available through the detailed analysis of large DRI projects. Second, it has built a high level of private-sector expertise in conducting traffic counts, evaluating traffic data, running traffic models, and performing a wide range of professional transportation analyses. Finally, it helped create the statewide transportation expertise and knowledge needed to refine some of the concepts that eventually appeared in the 1985 Growth Management Act.

Over the years, increasingly sophisticated forms of DRIs have evolved. Of particular interest are "areawide DRIs" which provide for planning and review of master plans for large tracts of land with multiple land owners. Another important type of DRI which is beginning to see frequent application is the "downtown DRI."

For example, the city of Orlando wrote and obtained approval of a 20-year master plan for downtown Orlando. The result, an approved DRI, vests the entire land area of downtown Orlando with a specific amount of growth between now and 2010. As part of the development order, the city has committed to specific infrastructure improvements, to certain regulatory actions (e.g., controlling the amount of downtown employee parking), and to ongoing monitoring activities. In return, the city will be able to grant development approvals for large projects within downtown for years to come without incurring the time and cost (both to developers and to reviewing agencies) that would be associated with individual DRIs. In addition to encouraging good planning, this use of the areawide DRI tool also supports efforts to focus development in existing urban centers rather than in suburban or exurban areas.

The 1985 Growth Management Act

After several years of debate, the Florida Legislature took an ambitious step forward with a series of bills now collectively known as the 1985 Growth Management Act. This legislation, and minor subsequent revisions, created or modified the three principal state statutes governing planning and growth management in Florida. These are Chapter 186 (State and Regional Comprehensive Planning Process), Chapter 187 (State Comprehensive Plan) and Chapter 163 (Local Government Comprehensive Planning Process).

State Comprehensive Planning Process

This statute requires the preparation of three statewide "policy plans"--the state water plan, the state land plan, and the state transportation plan. Chapter 186 also requires the development of "agency functional plans" which are to guide and control the state's budgetary process, ensuring that state expenditures support fulfillment of the goals and objectives of the State Comprehensive Plan.

Most observers would agree that the state has not successfully implemented the state planning provisions of Chapter 186. The state water, land and transportation plans have been published, although with little impact. The Governor's Office of Planning and Budgeting did attempt for several years to lead state agencies through the agency functional planning process. This effort was largely unsuccessful for two reasons. First, the process itself was so cumbersome that it collapsed under its own weight. For example, the first agency functional plan completed by the Florida Department of Transportation took the form of a document 1,100 pages thick. It contained hundreds of tables and matrices with budget numbers

arrayed against the state's transportation goals and objectives, none of which had much impact on appropriations or policy. Second, the Legislature itself has shown little interest in actually conforming annual appropriations to the elaborate objectives-driven process envisioned in Chapter 186.

In recent years, the agency functional planning process has languished unattended, a lingering shadow of the original intent which has neither been implemented nor eliminated from statute.

State Comprehensive Plan

The State Comprehensive Plan was an unusual piece of legislation which placed in Florida Statutes a list of 26 state goals and supporting policies. These tended to be statements that the major interest groups involved in passage of the bill could agree with. The result, Chapter 187, has a "motherhood and apple pie" flavor and avoids some of the fundamental choices entailed in practical growth management. For example, while a good part of the state's growth management efforts have addressed the "urban sprawl" problem, this term does not appear anywhere in Chapter 187.

The statute also lacks clear direction for the state's transportation programs. The single transportation goal reads: "Florida shall direct future transportation improvements to aid in the management of growth and shall have a state transportation system that integrates highway, air, mass transit, and other transportation modes."[3] The "policies" that accompany this goal in the statute provide little guidance for the difficult but important tradeoffs that must be made if the state's transportation programs are to do more than drift in the direction of least resistance.

Local Government Comprehensive Planning

This is the portion of the 1985 Act that has generated the most activity and the most controversy. The revised language in Chapter 163 requires cities and counties to submit growth management plans on a schedule that staggers the due dates over a three-year period that began in 1988 and ends in 1991 (coastal counties and cities first, rural interior areas last). These local comprehensive growth management plans are to be followed within one year by adoption of land development regulations that implement the plans. The Department of Community Affairs has developed a detailed administrative rule, Rule 9J-5, implementing these provisions of Chapter 163. In 1986, the Legislature strengthened the legal stature of Rule 9J-5, incorporating it by reference into Chapter 163.

The statute mandates certain elements that are to be contained in the local plans. These are listed in Figure 1. In addition to the mandatory elements there are elements that are required only for certain local governments and elements that are entirely optional.

Under Chapter 163, the local comprehensive plans are submitted for regional and state review for minimum compliance with regional policy plans and with state statutes. The state review is performed by affected state agencies and coordinated by the Department of Community Affairs, which has final administrative approval authority.

Local governments must have their plans approved by DCA within the timeframe established by statute or face sanctions for non-compliance. The chief sanctions threatened in statute are the withholding of state funding for local projects and having the appropriate regional planning council write the local plan. In practice, the more important sanctions may be the potential for a *de facto* development moratorium resulting from the uncertainty surrounding a contested plan, and the threat of protracted litigation with its attendant costs.

Early in the plan submittal process, as the coastal counties and cities were filing their plans, many of the local plans were found in non-compliance, often for reasons related to transportation issues. Although some of these local governments did challenge the state's authority, the state has been able to prevail in most of these cases. However, out of this early difficulty with the review and approval of local plans has come a *negotiated compliance agreement* process, which the Department of Community Affairs initiated to provide local governments with more breathing room to work out their differences with the state. Under the terms of a compliance agreement, a city or county might agree to correct a deficiency in their plan within a certain amount of time and thus obtain a conditional approval of their plan. This administrative settlement device may, in fact, have significantly lowered the temperature of the plan review process.

An important feature of the 1985 Act was the granting of generous citizen standing to intervene in the local plan adoption and re-

Figure 1
Local Comprehensive Growth Management Plans

Required Elements*	Additional Elements**
Capital Improvements	Coastal Management
Future Land Use	Public Transit
Traffic Circulation	Ports, Airports
Sanitary Sewer, Solid Waste, Potable Water	Recreational Traffic (Bicyles, Pedestrians)
Conservation	Public Buildings
Housing	Community Design
Recreation, Open Space	Redevelopment
Intergovernmental Coordination	Natural Catastrophe Safety
	Historical, Scenic Preservation
	Economic, Industrial, Commercial

* Required in every local plan

** Certain of these may be required for some jurisdictions; others are optional.

view processes. Under the statute, "affected citizens" may challenge local plans. Neighboring local governments may also intervene if they feel they are adversely affected by some feature of a proposed local plan.

On a statewide level, an advocacy group, the "1000 Friends of Florida" has served as citizen watchdogs and advocates for the full implementation of the Growth Management Act. This group has been active in reviewing local plans prior to approval by DCA and has been influential in the evolution and maturation of the local plan development and review process over the past several years.

The Concurrency Doctrine

A central theme in Florida's approach to growth management has been the concept of assuring adequate public facilities. For better or worse, the term adopted to describe this concept has been *concurrency*, a word which has its roots in a single obscure section of Chapter 163: "It is the intent of the Legislature that public facilities and services needed to support development shall be available concurrent with the impacts of such development . . . ." [4]

Level of Service Standards

The principal means of implementing the concurrency doctrine has been the requirement that local comprehensive plans must set *level of service* (LOS) standards for a wide range of public facilities and services. For each of the categories in Figure 2, local governments must specify what the local LOS standards will be and must compare forecast conditions with those standards. A plan that identifies standards which cannot actually be met (funded) will not pass muster in the state's review process.

The LOS device is adapted from highway engineering where it has historically been used to set design criteria for highway construction projects. In recent years, highway and transportation planners have increasingly used the LOS concept to describe actual observed operational characteristics of roads and streets. This approach has broad appeal and has now been broadened in Florida to apply to a wider range of public facilities and services.

Another important feature of the concurrency doctrine is the requirement for a five-year capital improvements element in each local plan. The capital improvements element must be fully funded (it cannot be predicated on hoped-for future referenda or public actions) and must put infrastructure in place at the time it is needed. The practical effect of this approach to concurrency management is to impose what might be called "truth in planning" on local governments. It should be possible for any citizen or elected official to determine from the local comprehensive growth management plan what future traffic conditions will prevail on a given street. The capital improvements element should show what projects are planned for that street in what years and how those projects are funded. Finally it should be possible to determine from the traffic circulation element whether this condition conforms to the LOS standard for that street classification and how it compares to conditions on other streets.

Figure 2

Public Facilities -- Required Level of Service Standards

- **Roads**
- **Sanitary Sewer**
- **Drainage**
- **Potable Water**
- **Solid Waste**
- **Parks and Recreation**
- **Public Transit***

***large cities and counties only**

Although the concurrency doctrine applies to several categories of public infrastructure, it has been the highway capacity issue that has attracted most of the attention in Florida since 1985. This may be in part a result of the fact that highway LOS appears to be easily measured and understood. The A-B-C-D-E-F formulation is appealingly simple (or at least appears to be). Also, the highway congestion problem may be the most readily visible manifestation of population growth impacts. Nearly everyone observes the effects personally, on a daily basis. Compare this with stormwater drainage, which tends to be "out of sight." Similarly it is difficult for the average citizen to actually "see" a shortage of potable water. Highway traffic congestion, on the other hand, is visible, tangible and frustrating.

Level of Service and State Highways

Shortly after passage of the 1985 Act, the Florida Department of Transportation began work on the state transportation plan required by Chapter 186. Published in September 1986, the Florida Transportation Plan contained an item which ultimately became a major focal point for the growth management debate in Florida: a table entitled "Minimum Acceptable Operating Level of Service Standards for State Highway System." [5]

The Florida DOT's initial reaction to the Growth Management Act was a concern for the state highway system. The department's planners believed local governments would respond to the statute's rigorous concurrency requirements

Figure 3
Florida's Level of Service Standards--State Highway System

Basic Standards

	Existing Urbanized Areas	Other Existing Cities	Transitioning Urbanized or Incorporated Areas	Rural Areas
Freeways	D	C	C	C
Principal Arterials	D	C	C	C
Minor Arterials & Other	E	D	D	D

Special Considerations

	Special Transportation Areas	Parallel to Exclusive Transit Facility	Constrained Facility	Backlogged Facility
Freeways	D	D	Maintain	Maintain & Improve
Principal Arterials	E	E	Maintain	Maintain & Improve
Minor Arterials & Other	E	E	Maintain	Maintain & Improve

by under-funding local roads and streets, while at the same time permitting a rapid pace of development. This would have the effect of shifting "local" traffic onto state highways.

Most heavily-travelled, multi-lane highways are state highways and these are usually the most direct routes between activity centers. Because of the discontinuity of many local streets, and because, even when congested, state highways generally offer better end-to-end travel times, it would theoretically be possible to continue shifting local traffic to state highways even as they become increasingly congested. The department believed that by setting minimum standards for these roads, the state would force local governments to properly fund local roads and streets, thereby preserving the state highway system for what the department felt was its intended purpose: "... moving people between cities, not between shopping centers ...."[6]

Following the process laid out in the 1985 Act, the state's Regional Planning Councils (RPCs) considered the state highway LOS issue as they wrote their regional policy plans. Ultimately all of the state's RPCs adopted the DOT's standards, thereby giving the LOS table the status of statewide policy to be followed in the preparation of all local growth management plans.

It is important to note that the state highway LOS standards represent a departure from a central philosophy of the 1985 Act with respect to local self-determination. Basically, the Growth Management Act created a mandatory planning process and imposed the concurrency requirement on local governments, but otherwise let each city and county set its own course. As long as future infrastructure requirements were identified and funded to the level necessary to meet the local LOS standards, the state was generally willing to allow local conditions to get as bad as local politics would allow. However, the state highway system became an exception where the state would allow conditions to get only as bad as the *state standards* allowed.

Over the years since the original Florida Transportation Plan was published, the department's LOS table has evolved and become more complex. Figure 3 shows the table in its current form. The familiar letter grades specify the lowest acceptable forecast operational level of service for state highways, measured at the 30th highest annual hour over a twenty-year horizon. The roadway types correspond to the state's functional classification system for roads and streets.[7]

The application of this approach to concurrency for state highways has given rise to statewide policy debates surrounding two subjects central to any growth management program: highway funding and urban sprawl.

Concurrency and Highway Funding

Developing a workable system of LOS standards for state highways has been complicated by the chronic underfunding of the state highway program. Since at least the mid-1970s the funding available for capacity enhancements to the state highway system has been much less than would be required to keep pace with Florida's traffic growth. As a result, a considerable backlog of needs (already congested highways) has built up, with little funding available for the future capacity expansions needed to support the growth most local areas in Florida would like to see continued.

The Magnitude of the Highway Funding Shortfall

Early in 1987, after eighteen months of work, the State Comprehensive Plan Committee, a blue-ribbon panel of state leaders, concluded that the state needed to increase its ten-year transportation program by $16 billion. A year later, the Florida Department of Transportation released its Strategic Transportation Plan which estimated that the shortfall was closer to $25 billion over ten years.[8] Of the $40 billion the department recommended the state should spend between 1989 and 1998 ($15 billion of which *was* funded), over $20 billion was for capacity expansion of state highways. Regardless of what estimates are used, it has been clear to most that

the state's level of highway funding is on a collision course with its concurrency doctrine.

In 1990, the state of Florida raised the state gas tax by four cents and increased other user fees dedicated to transportation. The increased revenue from these actions has allowed the Florida DOT to increase its work program by over $600 million annually, some of which will be invested in state highway construction. However, this funding level is still substantially short of what would be required to build the projects that state and local planners have identified as needed.

At the same time, state and local officials are finding the tollway concept, which had built so many miles of limited access urban highways in the 1970s and 1980s, to be increasingly out of favor with the public. In 1988, voters in Jacksonville approved a plan that would replace the expressway and bridge tolls with a local sales tax and refinance the outstanding construction bonds. Similarly, a recent increase in tolls on Orlando's expressway system, needed to fund expansion of the system, has generated a public grumbling that is not quickly going away.

The state highway funding picture, combined with a strict interpretation of the concurrency doctrine, has given local governments a difficult choice: slow the rate of development significantly, or come up with local funds to add capacity to the state highway system. Obviously, neither of these has been warmly received by local leaders.

Access Management

If it has been clear that the state highway system is insufficiently funded, it has been equally clear that much of the existing capacity is being squandered by inadequate control of access. Traffic engineers know that unregulated driveways and entrances can rob an arterial roadway of much of its potential capacity by introducing excessive turning movements and impeding the flow of traffic. Strip commercial development, which is the primary source of this problem, also tends to be built in a manner that virtually prohibits pedestrian or transit movements between commercial enterprises. This has the insidious effect of increasing highway *traffic* without really increasing *travel.*

However, it has been difficult or impossible for state or local governments to control this problem. Efforts to preserve highway capacity by denying driveway permits would lead quickly into court where the property owners would argue that denial of access deprived them of full use of their property. Failure to grant access, then, became a "taking" which had to be compensated. The courts allowed state and local agencies to deny access permits for safety reasons based on engineering standards, but greatly discouraged the denial of access based on other policy objectives.

In an attempt to address this problem, the Florida Legislature passed the State Highway System Access Management Act in 1988.[9] This law recognizes the right to "reasonable access" to property but establishes that this is not the same thing as the right to any particular means of access. The statute and the Florida DOT implementing rules have created a system of classifying highways and types of access. Ultimately, the program will be jointly administered by the state and local governments through agreements that, in effect, delegate the DOT's permitting authority for state highway access to local agencies.

Improved management of access to state highways should help to preserve some of the capacity which has been purchased at great cost to the taxpayers. However, it cannot retrieve the capacity already lost over the years.

Concurrency, Highways and Urban Sprawl

During the past five years in Florida, there has been a growing concern about the tendency for new development to seek out suburban and exurban locations. To understand why this is such a problem, and such a sensitive issue, it may be helpful to briefly review the structure of local government in Florida.

Local Government and Urban Boundaries

As a "home rule" state, Florida, through its constitution, gives wide latitude to cities and a small number of charter counties to exercise local governance. There are also two metro-consolidations in Florida, Metro-Dade (Miami and Dade County) and Jacksonville (with Duval County) which have tremendous local authority and autonomy.

Originally, the sixty or so non-charter counties were little more than administrative arms of the state, providing courts, law enforcement, voter registration and tax collection services. However, over the past several decades, counties have increasingly moved into the business of providing urban services. Land owners have traditionally resisted being absorbed by incorporated jurisdictions and, under Florida law, annexation is difficult to accomplish. At the same time, counties, with the collaboration of the Legislature, have been able to employ such mechanisms as special districts and special utility corporations to provide urban services (roads, water, sewer) in unincorporated areas.

This lack of a definable urban boundary combined with the inescapable arithmetic of lower rural land costs has led to predictable results: the suburbanization of Florida. In most areas of the state the population of unincorporated areas is growing significantly faster than the population of the cities. There are now several large (over 100,000 population) unincorporated subdivisions in Florida and many of the state's largest commercial projects are planned for what are currently rural areas.

Governor's Task Force on Urban Growth Patterns

The renewed interest in "urban sprawl" in the late 1980s marked a turning point for the state's growth management program. Although the 1985 Act made frequent reference to locating new development where the infrastructure and serv-

ices were available or could be efficiently provided, the term "urban sprawl" did not appear. Nor did "urban containment," "concentrated development," "high-density development," "compact urban form," or any of the other terms typical of the sprawl-related vocabulary.

In May 1988, Governor Bob Martinez announced the formation of a statewide task force of planners, elected leaders and business representatives to study the sprawl issue. The Governor's Task Force on Urban Growth Patterns was charged with the responsibility of recommending programs that state and local governments could use to promote more efficient, compact urban development patterns. The task force was also to identify the costs of sprawl and the savings that could be realized from reducing and slowing sprawl.

> ***"Transportation issues, principally those relating to highway congestion, have dominated Florida's growth management policy debates locally and in Tallahassee for much of the past six years. What initially seemed to be an infrastructure timing and funding problem now appears substantially more complex and the 'solutions' are proving to be elusive."***

Following a year of spirited debate and statewide hearings the task force, in June 1989, issued a final report which concluded that Florida was facing ". . . tremendous urban sprawl--a development pattern characterized by scattered, unplanned, low-density development that is not functionally related to adjacent land uses." The report went on to assert that "the proliferation of urban sprawl is creating urban growth patterns which are degrading the overall quality of life in Florida and increasing fiscal pressures on our state and local governments."[10]

Many of the task force's findings and recommendations were important and far-reaching, including the proposal that local governments should be required to establish urban service areas and urban expansion areas as a means of controlling where and when development would occur. The final report also contained a transportation chapter covering a range of subjects including public transit, parking policy, transportation demand management and interchange location.

Highway LOS Standards and Urban Development Patterns

One of the most divisive issues the task force wrestled with was the relationship between state highway LOS standards and the urban sprawl problem. In the end, the task force concluded that ". . . locationally insensitive level of service standards have the potential to encourage sprawling, inefficient land development patterns in our state." [11]

What the task force had discovered was the effect that strict enforcement of state highway LOS standards could eventually have on development patterns. If development could only be permitted where adequate highway capacity was available, that, almost by definition, would rule out existing urban centers where highway congestion is invariably the most severe. This could have the effect of sending developers out into suburban and rural areas "shopping for highway capacity"--the opposite of the concentrated urban form the task force believed Florida needed to encourage.

Emerging Issues--1991 and Beyond

After nearly six years of constant debate and discussion, Floridians are not yet tired of the growth management subject. There is a tremendous interest across the state in the technical details of growth management, and in improving the process. In 1991, with a new governor and new players in many of the key state agency positions, the time may be right to begin addressing some of the deficiencies of the original 1985 Act.

Amending Growth Management Plans

As the 450-plus local comprehensive plans are completed this year and the initial implementation phase of the statewide growth management process winds down, state growth management leaders are beginning to focus their attention on the process by which local plans will be amended. Even the best plan can be quickly compromised by a few well-placed land use map changes accomplished through the political process. Although both Chapter 163 and Administrative Rule 9J-5 address the subject of local plan amendments, this issue has not received the attention that it will eventually require. Most analysts expect further rule-making on this subject, perhaps as soon as mid-1991.

Intergovernmental Coordination

The need for coordination and consistency between the comprehensive plans of neighboring local governments has been a continuing issue from the early days of growth management in Florida. During the passage and implementation of the 1985 Act this issue was downplayed to protect the basic process from a destructive statewide battle over local autonomy. However, Florida will not be able to effectively deal with the urban sprawl issue until the intergovernmental coordination problem is resolved. Most of the state's major urban areas are made up of several counties and cities, all competing for development and tax base. Counties that today are rural in character are experiencing development pressures fueled by lower land costs and the attractiveness of Florida's natural (rural) environment. While planners may decry the loss of rural land to low-density suburban sprawl, local officials often see this development pressure as their opportunity to finally "cash in" on the boom.

The Governor's Task Force on Urban Growth Patterns recommended better county-wide planning in urban counties, and a strengthening of the requirements of the intergovernmental coordination element in local comprehensive plans. It is possible that these proposals will eventually receive consideration by the Legislature.

Compliance Agreements

The adoption of compliance agreements by the Department of Community Affairs as a way to work out inadequacies in local comprehensive plans and avoid protracted, expensive legal conflicts was a bold step. It has been argued that the availability of this option may have saved the growth management process from premature revision by the Legislature. However, the negotiation of compliance agreements between staff of local governments and the Department of Community Affairs can result in a local plan that is considerably different from what was presented to the public and to elected officials in local public hearings. The state will need to examine how it can preserve the compliance agreement tool yet safeguard the public participation and citizen standing features of the local comprehensive planning process.

State Budgetary Process

From the early days of Florida's growth management effort, it has been recognized that a land use-based approach to infrastructure planning could not easily co-exist with a politically based, project-specific state appropriation process. The Legislature has been unwilling to yield the all-important power to target spending on favorite projects in home districts. Now, however, the state is in a serious budget crunch brought on by the combined effects of a recession and an over-reliance on the sales tax as a revenue source. This has encouraged a renewed interest in the state budgetary process and particularly in the state budget-planning language in Chapter 186. There has even been some discussion this year of a "lump sum," non-project-specific appropriations process for certain infrastructure programs.

Transportation Concurrency Management Areas

As an outgrowth of the state highway LOS standards issue, the Department of Community Affairs has recently proposed an amendment to Rule 9J-5 that would allow local governments to establish "Transportation Concurrency Management Areas." The intent would be to give cities and counties the authority to adopt a different approach to roadway LOS standards within specific areas. This approach would entail monitoring and controlling conditions on an area-wide basis.

The "zonal" approach has been advocated by a number of local governments but has not been formally accepted by the state. Florida DOT wants state highway LOS standards applied and enforced at the "link" level--in other words, to each section between signalized intersections. However, local transportation planners have argued that this can lead to illogical results, such as adding capacity to roadways that should not be enlarged, shutting down development in areas where it should be encouraged (urban centers), and pushing development into areas where it is not desirable (sprawl).

An example of the zonal approach can be found in the city of Orlando comprehensive plan.[12] The Orlando traffic circulation element establishes fifteen traffic performance districts. Conditions in these districts will be evaluated using a "report card" that measures performance for each category of roadway (limited access, arterials and collectors) in each direction (north-south and east-west). While traffic conditions will be measured and evaluated at the link level, traffic performance will be reported as the percentage of street mileage in each category within each district that meets the minimum LOS standard for that type of road.

DCA's proposed rule amendment was put on hold in January, 1991, to allow the newly-appointed department secretary an opportunity to become familiar with the issue. The rule-making process will be reactivated later in 1991.

Conclusions: Transportation and Growth Management

Transportation issues, principally those relating to highway congestion, have dominated Florida's growth management policy debates locally and in Tallahassee for much of the past six years. What initially seemed to be an infrastructure timing and funding problem now appears substantially more complex and the "solutions" are proving to be elusive. However, there are a few conclusions to be drawn from Florida's experience so far.

Highway Capacity: Is More Better?

It is becoming apparent that Florida's infrastructure-based approach to growth management--defining the transportation problem in terms of highway capacity--may be leading in the wrong direction. Clearly there are environmental and physical limits to the amount of highway construction it is practical to pursue. Just as clearly, it is not possible to build highways at a rate matching the rate of traffic growth. The money is not, and will not be, available.

The original logic behind defining growth management in infrastructure terms was the desire to prevent a declining quality of life for Florida residents. Yet, little enhancement of quality of life results from the roadway capacity improvements needed to fully accommodate higher traffic flows. Freeways are tense, stressful, dangerous places. Will building more of them really improve quality of life? Local highway "improvements" that remove on-street parking in commercial areas, convert residential streets to one-way operation, or widen streets into sidewalk areas and front yards may inflict as much loss of quality of life as the congestion they are intended to correct.

Of course, not all capacity improvements are undesirable. Most are badly needed and should be built. However, it may

be useful to re-define the transportation objectives of growth management in terms of quality of life, rather than purely in terms of rate of flow. In so doing, a decision might be made to slow traffic down on certain streets (lowering the level of service) to enhance the pedestrian circulation and commercial vitality of a neighborhood. A decision might be made to concentrate density in a downtown area, even though state highways in the vicinity are crowded. A crowded downtown (low level of service) is a healthy downtown and a lot more fun to walk around than a 40-acre suburban mall parking lot.

Highway Funding: Whose Responsibility Is It?

Concurrency management breaks down in the absence of a clear delineation of financial responsibility for highway construction. In any city, most daily traffic, and virtually all peak hour traffic, is "local." To define the state's responsibility as being limited to "through" traffic is equivalent to limiting the state role to funding rural segments of intercity highways.

Few elected officials--state, local or federal--want to raise taxes to pay for infrastructure if that can be avoided. If concurrency management systems are to avoid becoming finger-pointing exercises where the principal issue is whose fault the problem is, some fundamental agreements must be reached up front about which jurisdictions have which responsibilities. In Florida this will require additional legislation.

Public Transit: Making it Through the Ugly Years

Florida's cities are not deploying public transit as a major growth management strategy. Yet most transportation planners would agree that extensive, well-patronized public transit systems are essential to the future of the state's major cities. What has become clear after dozens of studies and years of analysis is that there is a large gap between the density that can reasonably be served by highways and the density needed to support high capacity public transit. As a result, the community that attempts to concentrate development in order to ultimately achieve the density needed for transit will endure years of crowded highways--an ugly situation. The community that embarks on a high-capacity public transit project before it has the necessary density will endure years of poor transit system performance and the associated financial burden--another ugly situation.

Neither of these strategies is workable in an environment where cities and counties compete with each other for development. The best way to attract new commercial development projects (and the jobs and tax base they bring) is to adopt a low-density sprawling urban form supported by a continuing incremental expansion of the arterial highway system with an occasional new (toll-funded) freeway. Ultimately, the result will be a huge network of congested roadways and an urban development pattern that cannot be economically served by public transit--a fairly accurate description of urban Florida today.

Avoiding this fate requires two parallel strategies. First, the underpricing of highway travel must be addressed. This will entail a range of policies including parking supply and price, higher road user taxes, peak period toll road pricing, and aggressive demand management regulations. Second, more efficient means of supplying public transit services must be implemented. This will involve developing activity center circulators, concentrating high-frequency bus service on commuter routes, and making smarter capital investments in fixed guideway systems. Attractive, fast and frequent transit service can compete successfully with auto travel for a share of daily urban trips.

Summary

The state of Florida has come a long way in the past six years toward implementing the original vision of a well-planned state where a high quality of life and a clean natural environment could be achieved without sacrificing a strong and growing economy. The transportation component is, however, still something of a puzzle that will not easily be solved. The fact is that, while a lot of planning has gone on, no city in Florida has done much with transportation infrastructure that represents any significant departure from what has been happening elsewhere in the Sunbelt. A tremendous amount of highway construction has taken place. Public transit is still a minor player. The state has built fabulous airports. But the dream of using carefully planned transportation system investments as a powerful force in achieving the state's larger growth management objectives has yet to be realized. □

Notes

1. Urban areas with populations over one million include Jacksonville, Orlando, Tampa/St. Petersburg/Clearwater, West Palm Beach/Boca Raton, Ft. Lauderdale/Hollywood and Miami/Hialeah.
2. A more detailed discussion of the 1972 and 1975 legislation, written by Dr. John DeGrove, appeared in this publication, Volume 16, No. 1, Spring 1990, at pp. 26-34.
3. Sec. 187.201(20), Florida Statutes.
4. Sec. 163.3177(10)(h), Florida Statutes.
5. *Florida Transportation Plan*, Table 4-2, page 4-8, Florida Department of Transportation, September, 1986.
6. This was a phrase used often by the Governor and Secretary of Transportation during 1989 when the debate over this issue peaked.
7. Chapter 334, Florida Statutes.
8. The difference in these two estimates was attributable to the assumptions each study made about the costs of acquiring right of way for highway construction.
9. Section 335.18, Florida Statutes.
10. *Final Report*, Governor's Task Force on Urban Growth Patterns, June, 1989. Available from the Florida Department of Community Affairs in Tallahassee.
11. *Final Report*, p.51.
12. Orlando's plan has yet to receive state approval as of this writing. The primary outstanding issue is state highway LOS standards.

The R/UDAT as Urban Theater: A Planning Alternative for North Philadelphia

Sally Harrison

In October of 1990, a cluster of neighborhoods in the center of North Philadelphia was the subject of an unusual urban design study. A volunteer team of urban experts from around the country gathered there, seeking to forge a vision for revitalizing this deteriorating inner-city community. Neither the community's grim statistical profile, nor its image as portrayed in the press, nor the abundance of its decaying and abandoned structures would suggest that there was much reason to hope for a healthy future. Over the course of a highly charged four-day visit, however, the visiting team was engaged in a process which has helped to alter dramatically some of the entrenched negative perceptions of the community. It has given its disenfranchised residents a voice and has provided the imagery and agenda for positive change.

The team is known as a R/UDAT (Regional/Urban Design Assistance Team), and was fielded by the national American Institute of Architects (AIA) and invited by a local coalition of architects, planners and community leaders. The eleven-member R/UDAT team included architects and urban planners, a sociologist, an economist, an assistant chief of police, and specialists in housing, transportation, youth programs, and inner-city neighborhood development. Their visit consisted of a marathon program of on-site research, broad community outreach, brainstorming, debate, and synthesis. At the end of four days, the R/UDAT produced a fifty-page report which documented their findings, offering proposals for the neighborhoods' future development and new insight as to how the community might generate change from within.

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The R/UDAT Program

The North Philadelphia R/UDAT was one of over 100 such visiting teams which have provided planning and urban design assistance to communities around the country. The R/UDAT program has been successful in places of widely divergent character--from Lynn, Massachusetts to Denver, Colorado, to Ely, Minnesota, to Birmingham, Alabama--and has dealt with a correspondingly broad range of issues. Always brought in by local request, a R/UDAT is formed to address a set of problems which have persistently eluded the community's best efforts at resolution. Each team is carefully selected to include participants who possess the kinds of expertise required to address the specific problems of the community. As objective outsiders working within a compressed time-frame, the team's combined perspectives can bring the incisive vision that is needed to break the critical impasse.

While the circumstances and concerns of each R/UDAT may vary, the process and governing principals have remained much the same as when the first R/UDAT was organized in 1967. Many of the values associated with the activism of the 1960s find coherent expression in all the events of a R/UDAT visit. North Philadelphia R/UDAT is unique, as Philadelphia is the largest urban center to have hosted a R/UDAT, and because its focus is exclusively on the issues of inner-city decay that face many cities in the U.S. Yet the cornerstones of the R/UDAT process in Philadelphia were the same as those in Ely, Minnesota: community participation, interdisciplinary problem-solving, professional volunteerism, and the power of "the happening."

A R/UDAT for North Philadelphia

The idea of bringing a R/UDAT to North Philadelphia was first conceived by the Philadelphia Chapter of the AIA in

1988. Many in the architectural community had begun to express a wish to see the profession re-energize its role in the area of public service. To a profession essentially concerned with the quality of human life in the built environment, the magnitude of existing decay and the growing rate of deterioration in North Philadelphia was particularly alarming.

With the hope that the AIA might be constructive in helping to effect change, the chapter considered a number of programs through which the skills of its practitioners might be employed. After some consideration, it was determined that offering traditional design and programming services at the building project scale, while incidentally useful, was necessarily limited in value. It was unable to address the broader contextual issues which have exerted the most deleterious influence on the conditions of North Philadelphia. The urban design scale could permit a more comprehensive approach and provide a physical matrix and a social network in which subsequent smaller architectural initiatives might have a greater significance. The R/UDAT program, with its two decades of success in American cities, was perceived to be an excellent vehicle for bringing stronger visualization to the planning processes already underway in North Philadelphia.

This aerial view of North Philadelphia shows the industrial core of the R/UDAT study area. The Glenwood Community Garden is in the lower right hand corner.

The Philadelphia City Planning Commission had recently produced a planning document for the entire district of North Philadelphia. The first of its kind for the area, *The North Philadelphia Plan* was necessarily broad, giving more attention to social and economic issues than to physical development proposals. The commission enthusiastically endorsed the AIA's idea, and began to work with the chapter to focus a project study area and to provide informational resources and a network of individuals who would help direct the process.

Defining the Study Area

In a district the size of a small city which is so profoundly beset with problems of poverty, unemployment, and an aging and widely deteriorating physical infrastructure, it was essential to limit the project's geographic scope. The focus on a particular place within the whole of North Philadelphia ultimately enabled a deeper and more complex exploration of issues common to the broader population.

The city planning commission recommended that the study area involve roughly forty blocks at the center of North Philadelphia. It is home to an important but underutilized multi-modal transportation hub, and includes an extensive district of old industrial buildings, and fragments of the several surrounding residential neighborhoods. This area had been envisioned by the Planning Commission as a district center for North Philadelphia, because of its strategic location at the geographic heart of the district and visual prominence on Broad Street, the city's major axis. It is accessible to and from all points in the city, the region and the northeast corridor, and it offers a wealth of potential

low-cost development sites. Furthermore, at the time, the area's key landmark, the North Philadelphia Amtrak Station, had just been granted federal funds to rehabilitate its facility, and a local developer had begun to formulate plans for a neighborhood shopping center to be developed on the adjacent Amtrak-owned properties. Indeed, it seemed that in the district center area, the R/UDAT process might have the potential to reinforce existing strengths and new growth, and could bring vision to the problem of how to reverse the established pattern of disinvestment and decay. The critical first step would be to bring the idea to the stakeholders in the community.

Planning and Outreach--Surfacing the Issues

In a process which took place over 1½ years, the local AIA R/UDAT committee began outreach to a broad constituency composed of political and city agency representatives, neighborhood leaders, residents, and leaders of local institutions, businesses, and transportation agencies. The R/UDAT idea was met with a range of reactions, from enthusiastic endorsement, to conditional interest and outright skepticism. Among the concerns expressed initially and throughout the process were the general disbelief that the area could ever be "turned around," anxieties about the definition of the study area itself, and skepticism about the enduring value of outsiders' contribution and commitment. The issues are related, and they eventually surfaced in several forms as foci of the R/UDAT team's findings at the time of the visit.

Those who found the idea of bringing a R/UDAT to North Philadelphia most immediately acceptable were, not surprisingly, members of planning and urban design communities, and the development and the transportation agencies. Many in this group had already been involved with the original formulation of the district center idea. Analytically derived, the district center notion held a powerful appeal to those who plan for the future and problem-solve at the macro scale. Either individually or collectively, the R/UDAT process, relatively well-known, was seen as an excellent vehicle for focusing intense public attention on the area, bolstering the hard-fought gains in redevelopment.

By contrast, the local business and industrial community was the most broadly inaccessible and cynical, although, of all the important interest groups in the area, they collectively occupied the greatest share of the land in question. Even among the few industrialists who agreed to become involved in the pre-R/UDAT planning process, most saw little hope for the future of the area, claiming that they would gladly leave if they were able to sell their properties. Operating without links to the other elements of the community, they felt as if they existed in a state of siege within their barbed wire compounds, fending off criminal activity, struggling to find and retain an eligible work force. They felt demoralized by the relentless process of disinvestment in the area. Nowhere else did the conflicts between the interests of non-resident and resident stakeholders seem so charged with hostility and mistrust.

Discussion with the residential community revealed the antipodal view of the district center idea. The logic of it providing a valuable central service locus for the surrounding neighborhoods was not lost on the residents, but neither did it excite their vital interest, since the active centers of their neighborhoods were outside the bounds of the proposed district center. They saw the great "node" created by the intersections of Lehigh and Glenwood Avenues with Broad Street not as a place of encounter, but a no-man's land, the crossing of several neighborhood back boundaries. Moreover, the large industries and institutions within this zone had never been owned or controlled by the working-class residents of the surrounding neighborhoods. In their heyday, the industries had provided jobs, transportation and recreational opportunities for the local residents. However, when it was economically propitious for a plant to close or an institution to redirect its funds or activities to other locations, it was done, leaving unemployment and environmental decay in its wake. Historically disenfranchised and divided, the residents felt little instinctive territorial claim to the district in question. Yet despite their lack of passionate interest, they remained involved, sensing that in some way their local agendas might eventually find a place in the R/UDAT process.

Focus on the Neighborhoods

A turning point came several months into the pre-R/UDAT outreach process. The commercial developer for the Amtrak site had declared bankruptcy as the local real estate market's boom came to an abrupt end, all but extinguishing hope that market-driven private reinvestment might stimulate the area's renaissance. Concurrently, Philadelphia's municipal financial structure was approaching collapse, a condition rendered all the more ominous following a decade of dramatically reduced state and federal support for urban centers. As alarming as these circumstances were, they ultimately proved to be profoundly fortuitous. It was now inescapably apparent that the energy and commitment to change were not to be found either within the forty blocks sanguinely envisioned as the district center or among the traditional public and private agents of urban redevelopment. The project was compelled to revise its focus, seeking a fundamentally new iteration of the inner-city revitalization process. The local AIA began to redirect its attention more deeply into the neighborhoods surrounding the district center.

There exists within and among the neighborhoods of central North Philadelphia an astonishing range of environmental texture and habitability. Abrupt juxtapositions abound. A block of beautifully maintained owner-occupied dwellings will exist literally around the corner from a block with seventy percent abandonment. An energetic pedestrian-scaled neigh-

borhood shopping street, ten blocks long, erodes dramatically as it approaches the railroad zone, then gathers strength again in the next neighborhood. Vegetable gardens, monumental wall murals and sculpture parks flourish in empty lots--an open challenge to the proliferating local drug trade. Existing amid widespread poverty and environmental decay, these acts of community spirit were impressive, yet nearly invisible to the broader Philadelphia community.

As the project shifted its focus, a deeper understanding of the dynamics of the five neighborhoods in the study began to emerge, and unexpected tensions among the different neighborhoods began to manifest themselves. Negotiations over precisely where and how to describe the boundaries of the study, where to locate planning meetings and the public events during the R/UDAT visit, the route for the team's tour of the study area, all brought to the surface the deep divisions among the neighborhoods themselves. Physical separations created by major traffic arteries, rail lines, and industrial tracts had been reinforced over the years by patterns of political districting, competition for scarce redevelopment funds, and residual antipathy from the gang turf battles of an earlier generation.

Morale among the residential community was also low at the time of the project. The epidemic of crack abuse and its attendant criminal activity had risen dramatically. North Philadelphia had been the target of a spate of newspaper and magazine articles sensationalizing the problem. Neighbors were both deeply suspicious of the consistently negative outsiders' view and internally distraught about the realities which deeply affected their lives.

In this light, the AIA's outreach efforts were greeted at first with considerable ambivalence--here were outsiders promoting the involvement of yet another rank of outsiders in the affairs of their community. Compounding this were the racial and cultural differences between the residents who are almost exclusively African American and poor, and the architects who were predominately white and middle-class. But beyond this obvious distinction the architects were, to their credit, a virtually unknown quantity. A private sector professional volunteer group with almost no track record in the

The Experience of a R/UDAT Volunteer

Cathie Dopkin

I began my involvement in the R/UDAT process with very little experience in urban planning. As an intern architect from a rural area and a new resident of Philadelphia, the R/UDAT was a crash course in urban issues. This experience led me to take a closer look at the deteriorating areas of the city that I had previously believed were beyond hope, and to consider the possibilities for change. By helping to research the North Philadelphia area, observing and working with the R/UDAT team members, and seeing the community's positive response, I found much to hope for.

We need to come together as concerned individuals to form a community with a focus, a community of Philadelphians, planners, city employees, politicians, and design professionals in order to reverse the deterioration of our urban fabric.

I volunteered to work on the data and outreach subcommittees to gather information about the study area. Through this research and many site visits, I gained a familiarity and new appreciation for the strengths of the area. Small street lights at each porch bring life to the "good" blocks at night. A well-tended community garden, formerly several acres of industrial "wasteland," is now a community gathering point. Strong community and church leaders are investing energy in developing the potential of the people, especially the children, through recreation and education programs. A small business incubator aids new businesses. These are just a few of the positive forces at work in North Philadelphia.

I was interested in understanding the physical evolution of this area and why the existing urban fabric does not work for the residents today. Studying the industrial history reveals some of the problems. The railroads came first, prompting the development of factories. As the factories thrived, the city extended its grid around them. Systematic infill of narrow brick row houses for the workers created the basic fabric of the area. Economic and social life, as well as the physical environment, was centered around the factories.

Now, with the transformation to a service economy, the North Philadelphia neighborhoods are left without a center for daily activity and livelihood. Vacant factories loom over each neighborhood as a reminder of a more prosperous past. This situation is not an uncommon one and I hope that what I experienced over the study weekend can be applied to future urban designs. The parameters of the R/UDAT study were a "road map" for a diverse community with few economic resources to revitalize a crumbling urban landscape.

Thursday and Friday of the R/UDAT weekend were orientation days and included a reception Thursday night, presentations from community organizations Friday morning, and a bus tour of the area Friday afternoon. Saturday was a day to focus on the specific issues the design team would address and began with a "town meeting." The publicly televised

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community, the team had the advantage of being tied neither to the city nor to industry and of being viewed mostly a curiosity. As a result, the residential community gave their support for the R/UDAT slowly, through a process of exploring and correcting misperceptions on both sides and discovering the strengths and opportunities in places where they did not appear to reside.

The R/UDAT Steering Committee

As a result of the preliminary outreach, a broad-based steering committee was formed. Its purpose was to define the issues of importance for R/UDAT to address and to begin establishing a network of leaders committed to the on-going revitalization of the area. The first steering committee meeting was held a year before the R/UDAT visit. Seated around the table, together in most cases for the first time, were stakeholders representing all the interests of the community--individuals who, working collectively, could help effect change.

Each steering committee meeting was loosely structured around a discussion topic such as local job-training and employment opportunities, financing physical development projects, social programs and the future of youth, and so on. Well before the R/UDAT visit was to occur, the committee and community were forging essential bonds and bridging traditional bureaucratic, professional and cultural divides. Though sometimes awkward and unpredictable, a fundamentally new community-building process was initiated.

A certain mystique and excitement surrounding the impending R/UDAT visit was also responsible for cementing this diverse and unlikely group, and generating broad public interest in the project. The nature of the team's visit as a distinct public event inspired and even compelled active participation and cooperation in its planning. In an editorial, *The Philadelphia Inquirer* described the pre-R/UDAT planning process as "the urban equivalent to an Amish barn-raising."

By the time of the R/UDAT visit, more than 150 volunteers were involved in making the project happen. Architects, community activists, city personnel, clergy, local busi-

forum was a key factor in the success of the R/UDAT. Without the public's involvement, support, and airing of their own goals for their community, the suggestions of the R/UDAT team could go nowhere. One might think that with the limited time frame for the R/UDAT, it would be more productive to spend the time designing, but the interaction between community and team members built trust in the R/UDAT process and helped those involved to understand that this process would be a dynamic one and not a detached academic study.

Coming from the town meeting with a long list of the community's goals, the team began to brainstorm for ideas. Several members were interested in a second look at the study area, and I acted as tour guide. In addition to getting a better feel for the area, team members wanted to look at the potential of the train stations as a focus for renewal in the area. How could they be connected to the primary arteries, the surrounding neighborhood, and to one another to create a new center for North Philadelphia? Currently, there are three regional rail lines, whose stations are all within view of one another, and a subway station with a direct link to Center City. None of these stations are safe, nor are they thriving as transportation nodes. As if to emphasize the dilemma, we had great difficulty finding the entrance to one of the stations. The only entrance to this station was through an unmarked tunnel opening at the back of a building along Broad Street.

Transit police on watch described what happens when they leave: gangs move in to drink alcohol and smoke crack. The evidence of this was scattered about the feet of our group. Prostitutes bring their customers there. Anyone getting off the train late at night is fair game for attack. The police simply cannot respond before the muggers have scattered. This honest conversation gave a sense of gravity and urgency to the design task.

Sunday began with the team in conference, hashing out a design direction. The essential concept was presented to the support team late in the morning. The focus of the design was a civic/economic/entertainment/transit center around the train station. A greenbelt was proposed along the Amtrak rail line and an industrial zone along the SEPTA (Southeastern Pennsylvania Transportation Authority) line. The residential areas would be transformed into "urban villages."

By this point everyone involved had assimilated enough information about the study area to form passionate opinions on the proposals. There were heated debates between team members, students, and AIA organizers regarding the appropriateness of the various alternatives. Throughout the day, specific designs were sketched, discussed, and discarded as the team struggled to apply the design concept to each area of the site. There were frequent team conferences to keep things on track. Finally, around one o'clock in the morning, things began to coalesce into a cohesive urban design. I left the study site about three o'clock in the morning and between that time and the time of the presentation, final drawings were made and photographed, the report was written, typed, and printed, and I assume the team members got some sleep.

The community came together again Monday evening and expressed overwhelming support for the design ideas and efforts of the team. I had expected controversy similar to that which had occurred among the team members, but the residents looked beyond specific design solutions and saw a goal toward which to work. The R/UDAT team gave the residents a rallying point. Any future effort to realize a transformation of North Philadelphia can now build on these design ideas and on the coalition of residents and professionals which has formed as a result of the R/UDAT weekend.

ness people and residents, students and planners lent their time and skills to subcommittees dedicated to gathering information, raising funds, and producing and publicizing the events of the four day "R/UDAT weekend." The local chapter of the AIA served as the central clearinghouse for project, with volunteer architects leading the various subcommittees.

Selecting a Team

Since the idea for a R/UDAT had emerged in early 1989, the national AIA had closely monitored the preliminary planning process and helped the local committee to form a statement of mission. The project was officially approved a year later when the national R/UDAT task group was satisfied that the breadth and depth of local commitment, essential to the eventual success of the project, had been achieved. Their search for the specialists who would make up the R/UDAT team began immediately.

Clifford Graves, AICP, an urban planner from San Diego with extensive experience in both public and private sector work and a veteran of many previous R/UDATs, agreed to lead the team. He made two preliminary visits to Philadelphia. The first trip was to assess "the lay of the land," help determine the composition of the team, and further shape its mission. The second trip, a month before the event, was to review the final logistical preparations. He strongly affirmed the local committee's wish to see a substantial African-American representation on the team, and emphasized the need for the inclusion of specialists in the social/human resource professions. His observation that the study area contained in it many issues generic to all of North Philadelphia and to many older industrial inner-city neighborhoods helped to permit a broader interpretation of its specific problems. His vision of the report was that it be brief, open-ended, and comprehensible to a wide range of readers.

Team member Rosie Greer talks to a neighborhood youth near the site of a new housing project during the bus tour.

The R/UDAT Visit

When the team arrived on Thursday evening, October 18, 1990, the stage was set for an event of public theater which was to unfold in dynamic uncertainty over the next four days and involve hundreds of players. The event captured the imagination of the city at large. The advance work performed by scores of local volunteers amounted to an act of collective faith. The volunteers were the orchestrators for the R/UDAT and provided the facts and background for the more creative and chaotic activities of the weekend. They ensured that the inarticulate voices were heard and that the less obvious places were seen amidst the clamor of publicity.

The team members had received a briefing document describing the area and outlining the issues to be addressed in advance of their arrival. They came from Los Angeles, Chicago, Boston, San Diego, Cincinnati, Dayton, and New York, each with extensive experience with communities in similar situations. They were welcomed by the steering committee at a reception held in the North Philadelphia community center that would house the R/UDAT workshop. Afterwards, they retreated to dinner to get to know one another, trade initial impressions, and begin to form the camaraderie which would make eleven individuals a working team.

Discovering the Community

On Friday the team heard from agencies and institutions with a stake in North Philadelphia: the city planning commission, the school district, housing agencies, the police force, Temple University, social service providers, business leaders, transit agencies, and many others. These groups, all willing participants in the community revitalization process, discussed existing programs--some that were succeeding, others that had failed--and ideas for new and perhaps better ones. Their stories were more often about the deep and on-going frustrations experienced in trying to effect positive change with diminishing resources in an area of dramatically increasing need.

The team emerged sobered from this first round of hearings. After a lunch at the worksite, spirits rose as they embarked on a community-led walking and bus tour of the neighborhoods, where the team could experience first-hand a sense of the people and the place. The team with its dozen tour guides and additional hangers-on wound their way through trash-strewn back alleys and up vibrant shopping streets. They were greeted by excited preschoolers at a city-run day-care center, and spoke with the artists and residents who had labored together to create a Gaudiesque sculpture garden in an abandoned lot. They met with a coalition of community activists and retailers in their modest storefront head-

Two children at the Greenwood Community Garden.

quarters. These individuals told of their efforts to combat crime and to reinforce the small, community-based economic initiatives.

Once aboard the bus they negotiated a labyrinth of desolate streets in one of the area's most blighted and drug-infested residential neighborhoods. The bus turned a corner, and the team discovered a "typical anomaly," the thriving block. They gathered in the tiny front room of a local community organization, and while a daily food distribution program was being conducted, the organization presented its bold dreams for transforming North Philadelphia's civic identity.

Even among the impossibly immense vacant lots and the abandoned industrial buildings that surround the major thoroughfares and railroad right-of ways, the team was shown evidence of new growth. At the deteriorated Amtrak Station on Broad Street, they met with neighbors and political representatives and learned that, despite recent set-backs for the commercial development, federally funded renovations were about to commence. The team also met local entrepreneurs whose burgeoning businesses were housed in a nearby converted garment manufacturing building where they also received management training as a part of Temple University's new Small Business Incubator. The tour passed the site of the demolished Connie Mack Stadium, where the construction of a 5,000-seat church was underway. The construction was financed primarily through funds raised by its parishioners, which signified the tremendous power of the church to gather and anchor the community.

Perhaps most impressive of these large-scale initiatives was a vast and beautiful community vegetable garden near the railroad tracks. Its organizers told how several years before an angry group of neighbors had laid claim to the vacant industrial site that had become an illegal dumping ground, polluting the air and the views from their homes. Supported by the city, and working with a local greening organization, they transformed an environmental atrocity into a flourishing collective garden with one hundred individual plots. Although they are still squatters on this abandoned property, the gardeners' effective ownership is and will remain unchallenged.

The team was profoundly moved by what they saw of the local initiatives. Already they had met with scores of dedicated leaders at both the public and grassroots level. But their next event was truly a public forum open to any citizen. On Saturday morning, over 300 people gathered in the auditorium of a local elementary school. Full of humanity and optimism, North Philadelphians eloquently shared their concerns and dreams for improving their lives and remaking their neighborhoods. The forum was broadcast live on local public radio and television, bringing these stories to larger audiences, many of whom were ignorant and often fearful of the community. In the frontispiece of their final report, the R/UDAT team recalled the messages they heard that Saturday morning as "The Words We Worked By:"

> The future is in our children.
> We want to improve North Philadelphia ourselves, for ourselves.
> North Philadelphia is where we intend to stay.
> North Philadelphia should symbolize our pride and our power.

When the meeting concluded on Saturday afternoon, the R/UDAT visit was almost half over. The team had an arduous two-and-a-half days before them. Inundated with vast amounts of information in the form of oral testimony, visual images, statistics, and first-hand experience of the place, the team began to sort out their impressions and form a structure for accomplishing their mission.

Debate and Synthesis

A cadre of students and volunteer architects had set up the worksite, organized a resource library, and assisted throughout the weekend as typists, drafters, chauffeurs and go-fers. Members of the steering committee made themselves available to answer questions or to provide a sounding board for the team's emerging concepts.

As specific issues emerged, the team members tackled tasks appropriate to their individual expertise, some dispersing into the neighborhoods, others working at the site with clusters of students and steering committee members. Periodically, the team would gather in closed-door sessions to work out the overall direction of their proposals. As the hours wore on, these sessions became more frequent and were characterized by vigorous dialogue, cycling through free-flowing generation of ideas to intensely focused problem-solving to decision and synthesis.

Working through Sunday night, the R/UDAT and its assistants produced and published a fifty-page report, entitled *A Vision for North Philadelphia*. Through maps, sketches and text, they presented a cogent if multi-faceted vision of what North Philadelphia's future could be and a new process for how this might be achieved.

Presentation to the Community

The weekend's finale came on Monday evening when the R/UDAT presented its conclusions at a second public meeting. Publicity surrounding the R/UDAT visit had generated tremendous excitement in the North Philadelphia community, and the school auditorium overflowed with eager, curious and proud citizens. One by one, the team members described the parts of the total vision, explaining that the ideas came directly from what they had seen and heard in their four days in North Philadelphia--a reinvention of a place whose strengths and community identity lie just below the surface.

Their ideas ranged from the grand to the practical, and took the form of urban design schemes, broad strategies for social and economic development, and detailed programs for neighborhood action. They emphasized that the people must claim their own community, exert their power collectively, and cultivate partnerships with city agencies, institutions and industry as a means of realizing their own agenda. Committed to the principle that community revitalization presumes a holistic treatment, they addressed the gamut of issues, including housing, education, jobs, public safety, recreation, and policy-making.

The team told its audience of having been profoundly moved by the resourcefulness of this structurally disenfranchised community. Small neighborhood groups had helped residents maintain a foothold in a chaotic environment, but they also noted that the profusion of such organizations has led to "Balkanization," and that the broader issues common to all were not being consistently addressed. Having also heard repeatedly that the established leadership does not "walk their talk," the R/UDAT proposed the creation of a truly grassroots coalition called the North Philadelphia Unifying Committee. The committee would be made of the effective informal leaders of the community: block captains, grassroots activists, elder leaders of the community, etc. The committee would also include local business owners, clergy, and educators. These leaders, not the politicians and agency heads, would be the voice of the community. They would confirm and prioritize issues that confront North Philadelphia, and plan a process to influence the "formal" leadership.

Many of the proposals formed around the team's observation of incoherence both within and among the various residential neighborhoods, many of which are overbuilt, yet teeming with vacant lots and abandoned houses. To promote a stronger sense of place, the R/UDAT envisioned a new pattern for inner-city dwelling that they called the *urban village*. This concept would evolve from old patterns and introduce elements needed to reinforce contemporary family living, by modifying the existing fabric where it is strong, while broadly redeveloping it where it is most fragile.

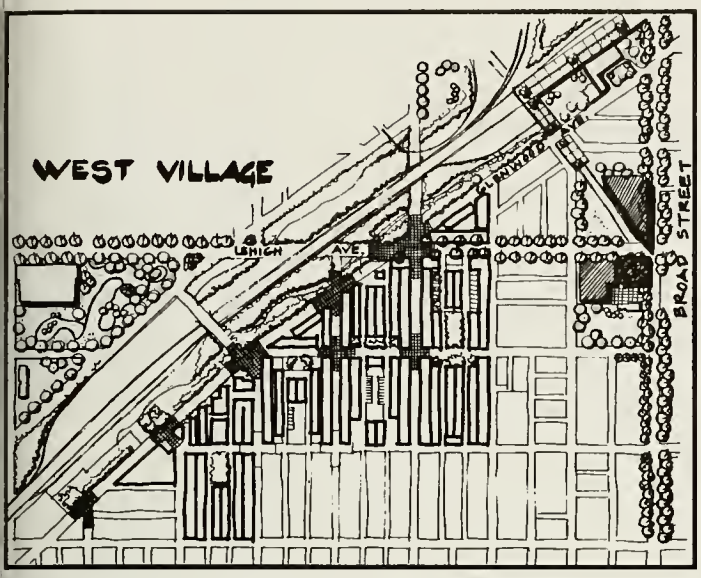
In the urban villages, new dwelling types that are more flexible and have more private open space would provide an alternative to suburban housing choices. Central neighborhood greens with play spaces, convenience stores and community rooms, and a hierarchy of local and through streets, would give the individual village its own identity. A sense of belonging to a definable social structure beyond that of the existing residential block would enhance neighborhood activism and help to combat crime, deter dumping, and control the blighting influence of physical decay and abandonment. A village could then be "adopted" by major corporations, to augment local resources and forge ongoing bonds with commerce and industry.

Again and again the team emphasized the importance of self-empowerment and of recasting entrenched images and preconceptions about their community and its potentials. Even in the large-scale urban design proposals, the subtext of their ideas was "for the people and by the people." The R/UDAT proposed a "Grand Design for a Civic Center" at the Broad, Lehigh and Glenwood intersection, effectively revisiting the district center idea, but investing it with a vision of vital civic activity. The team recommended creating a great urban plaza by connecting a new school for the performing arts, a North Philadelphia town hall, and an integrated transit hub transformed into a kind of "crystal palace." As the audience absorbed the lavish reinvention of the desolate center of their community, they expressed excitement, but also disbelief. The team was persistent, encouraging the community to permit themselves to dream big dreams. For only through the process where hopes were raised and "reality" imaginatively redefined can a community achieve a better future.

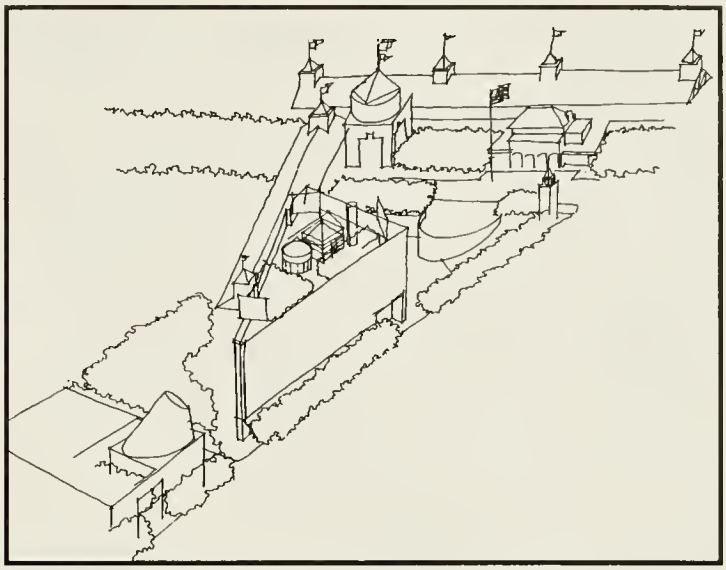
Aftermath

In the months since the R/UDAT, the interest in revitalizing North Philadelphia has grown in both breadth and depth. The media, especially the Public Broadcasting Service, had covered the event so completely and responsibly that the awareness that positive change can occur in North Philadelphia has grown significantly. Offers of help have come from many quarters, including some where the project initially had been viewed with skepticism.

The greatest surge of enthusiasm has come, not surprisingly, from North Philadelphians themselves. Having been accorded respect for their collective strengths and shown how they might regain control over the fate of their community, the residents in North Philadelphia are working together to reinforce one another's efforts. Seeing the benefits of cooperative neighborhood politics, several historically competitive neighborhoods joined forces. This coalition successfully lobbied the Philadelphia Housing Office to gain



The proposed plan for the west side of Broad Street is based on the "urban village" concept, and includes the Amtrak station and civic center (far right).



Concept drawing of the civic center, looking north on Broad Street toward the Amtrak station. The civic center idea has provided the community with a vision of vitality.

its share of the federal funds to be distributed this year. New partnerships with entities outside North Philadelphia also have begun to emerge. Community meetings have been organized in several neighborhoods to distribute copies of the report and discuss and interpret its content. A number of these meetings have been unusually well-attended not only by residents, but also by influential outsiders who previously have had little to do with the neighborhoods, such as bank executives with branch offices in the area, senior city officials, mayoral candidates and members of the press.

The R/UDAT steering committee remains intact and is somewhat larger and even more broad-based than it was originally. Its role now is to help shape the process for implementing the R/UDAT's recommendations and to transfer leadership from the AIA to the community. An informal poll of the members' priorities revealed overwhelming interest in the North Philadelphia Unifying Committee idea. A R/UDAT team member who had been the progenitor of the concept has agreed to return to North Philadelphia to conduct a workshop on how the community can put the idea into action.

Meanwhile, important planning and development initiatives representing aspects of the R/UDAT's civic center design have gone forward. Amtrak has selected a new commercial developer for the site near the railroad station, and the residents are organized to participate in the planning of this project. The Philadelphia City Planning Commission and the regional transportation authority, together with the political representatives, are making efforts to secure special federal funds for integrating and improving the various transit modes in the hub. These developments have stimulated the Philadelphia AIA to consider organizing a "mini-R/UDAT," which would involve organizing a locally fielded multi-disciplinary team to study and provide a more comprehensive and detailed set of design guidelines for that particular area. Inspired by the R/UDAT, the leaders of the architectural community are also now planning an ongoing program, whereby its practitioners can offer *pro bono* design services to small community organizations.

Postscript

The power of the R/UDAT process as applied to North Philadelphia lies less in its particular plans and recommendations than in the results of the self-revelatory ritual enacted during the four-day visit. The strengths of a profoundly disparaged community were made dramatically present. From this, a vision of the possibilities for change emerged. Although this image is neither complete nor rigorously accurate, it is suffused with life, and completes one act in the evolution of urban theater. An alternative to traditional planning practice, the R/UDAT invited the citizens of North Philadelphia to participate in the creative process, to celebrate, to suspend disbelief, and to enter into the future fully empowered by their own imagination.

> North Philadelphia is not a compilation of statistics or charts. It is thousands of people in an area that is an integral part of Philadelphia's past, present and future. No one concerned about the city's future can ignore North Philadelphia's problems and potential. North Philadelphians deserve to live with dignity, to raise their children safely, and to have access to the same economic opportunities enjoyed by all Philadelphians. They deserve nothing less.
>
> From *A Vision for North Philadelphia*

Local Regulation of Billboards: Settled and Unsettled Legal Issues

Frayda S. Bluestein

Local ordinances regulating billboards, like other local land use regulations, must strike a balance between achieving a regulatory purpose and minimizing interference with private property rights. Since billboards contain constitutionally protected speech, both commercial and noncommercial, an additional layer of legal principles must be taken into account in developing billboard regulations. In addition, evaluating the impact of regulations on property rights has become complicated and unsettled due to several recent federal court decisions dealing with claims that local regulations containing amortization or removal provisions for nonconforming signs effect an unconstitutional taking of property without compensation. As in any other area of regulation, settled law gives clear guidance to the ordinance drafter; unsettled law makes for difficult drafting and policy decisions. The purpose of this article is to summarize some of the legal issues that have been raised in federal and North Carolina state court cases involving challenges to billboard regulations, to identify some of the issues that appear to be settled, and to discuss some that are not.

Statutory Authority and Public Purpose

A local regulation, to be valid, must serve a public purpose and must be within the scope of a state statute granting the local government the power to regulate the subject matter. The public purposes local governments have cited in support of billboard regulations have evolved along with the billboard structure itself and changing social values. Early sign ordinances were designed to protect against safety and fire hazards posed by wooden signs placed low to the ground. As signs have become larger, higher and more numerous along roadways, the basis for regulating them has changed. The primary purposes identified in support of modern billboard regulations are traffic safety and aesthetics. Related regulatory goals include economic development, promotion of tourism, historic preservation, and protection of the public investment in the highways. Any of these purposes is likely to be upheld as a legitimate public purpose for billboard regulations, as long as they are articulated and rationally related to the means used to regulate (as contained in the ordinance).

When local ordinances are challenged, the courts are careful not to second guess the legislative decisions and policy choices made by the local government, instead deferring to the judgment of the legislative body. Accordingly, early decisions dealing with billboard regulations summarily approved the health and safety justifications for regulating signs.[1] Later, when reviewing regulations based on aesthetics, the courts were initially hesitant to find that aesthetics alone was a sufficient public purpose to justify billboard regulation. Most billboard ordinances are based on aesthetics along with other purposes, usually traffic safety, so courts could uphold the ordinance without having to directly address the strength of the aesthetics basis.

In 1981, perhaps reflecting a change in social values and the growing environmental movement, the United States Supreme Court handed down the landmark billboard case of *Metromedia v. City of San Diego*, upholding, for the most part, a comprehensive local billboard ordinance.[2] The *Metromedia* decision held, among other things, that the city's interest in avoiding visual clutter was a legitimate public purpose for billboard regulation. Both federal and state courts in North Carolina have also now expressly sanctioned billboard regulation for aesthetic purposes, along with other types of aesthetics-based regulation, such as those for junkyards and for historic preservation.[3] Although the type and extent of regu-

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lation that may be justified by aesthetic concerns remain uncertain, it is now well settled that aesthetics is a legitimate public purpose upon which regulation may be based.

Since local governments derive all regulatory authority, by way of delegation, from the state legislature, billboard regulation must be within the scope of a state statute authorizing such regulation. Most sign regulations are contained in zoning ordinances and have uniformly been considered to fall within the scope of the zoning enabling legislation. A recent North Carolina case addressed the question of whether billboard regulations adopted outside of a zoning ordinance are statutorily authorized.

Henderson County, like most North Carolina counties, does not have zoning throughout the county. Nonetheless, the county sought to regulate billboards county-wide by adopting a billboard ordinance under its general ordinance-making authority rather than its zoning authority.[4] A billboard company challenged the ordinance on the grounds, among others, that the zoning authority, which requires consistency with a comprehensive plan, public hearing, notice and other procedural protections, is the only authority pursuant to which local billboard regulations may be adopted. The court rejected this argument and ruled that the general ordinance-making statute authorizes billboard regulation.[5] It is important to note that in the Henderson County case, public hearing and notice were provided, even though they were not required as would have been the case had the regulation been a zoning ordinance. Thus there was no evidence that the general ordinance-making authority was used to avoid the procedural protections built into the zoning enabling statute. If the general ordinance-making authority were used under circumstances where zoning was in place and could have been used, a question could be raised about whether the intent was to avoid the procedural requirements of zoning, and a court might reach a different decision. Furthermore, if a billboard ordinance were structured according to districts or otherwise established distinctions justifiable only by reference to a comprehensive plan, use of the general, rather than the zoning, authority could expose the ordinance to a constitutional equal protection or due process challenge. Bearing in mind these precautions, billboard regulations can be validly enacted pursuant to the general ordinance-making, as well as the zoning, authority.

The Outdoor Advertising Control Act

Another state statute indirectly affects local regulation of billboards: North Carolina's Outdoor Advertising Control Act. This act prohibits the erection of billboards within 660 feet of, or that would be visible from, federal aid primary highways.[6] Signs located in commercial or industrial zones and areas are allowed within 660 feet of the highway under the statute. Local governments are not prohibited from regulating in areas outside of the coverage of the act, or through means that are more strict than those contained in the act.[7] With respect to removal or amortization of nonconforming billboards, discussed in more detail below, local government authority is explicitly limited by N.C.G.S. §136-131.1, a part of the state Outdoor Advertising Control Act. That section requires payment of compensation for removal of any sign that is allowed under the act and for which a valid permit has been obtained. To avoid potential conflicts with the state law, some local ordinances exempt signs located on federal aid primary highways from amortization and other provisions.

The state Outdoor Advertising Control Act, along with the various enabling statutes governing local regulatory authority, are, of course, subject to change, and should be reviewed before drafting or adopting local billboard regulations.

Constitutional Issues: Free Speech

Unlike other land use regulations, sign regulations affect communication that is protected by both the state and federal constitutions. Regulations affecting speech fall into two major categories for purposes of judicial review: content-neutral and content-based. The standards of judicial review are more stringent if a regulation is content-based, that is, if the regulation targets a particular message. On the other hand, regulations that restrict the time, place and manner of speech on a content-neutral basis, that is, without reference to the particular message, are less strictly reviewed by the courts and are likely to be upheld as long as they have a rational basis. In addition, although the Constitution protects both commercial speech (advertising) and noncommercial speech, commercial speech receives less protection than noncommercial speech. This means that the courts scrutinize more closely regulations that affect noncommercial speech and will require a stronger justification for restrictions on noncommercial than for commercial speech.

Most billboard ordinances are content-neutral time, place, and manner regulations, designed to regulate the impact of the structure, not the content of the message it displays. The courts have determined that regulations based on distinctions between commercial and noncommercial signs are content-neutral. Similarly, regulations that distinguish between on-premise and off-premise[8] signs are considered content-neutral. In contrast, in the *Metromedia* case, discussed above, the United States Supreme Court made it clear that narrower categories of signs are considered content-based and, in that case, did not withstand the stricter level of scrutiny. The San Diego ordinance exempted, among other categories, government signs, religious symbols, time or temperature signs, commemorative plaques, and temporary political signs. The Court held that, "Although the city may distinguish between the relative value of different categories of commercial speech, the city does not have the same range of choice in the area of noncommercial speech to evaluate the strength of, or distinguish between, various communicative

interests."[9] Thus, courts may give more leeway for distinctions among types of commercial speech, since it is afforded less protection under the constitution, as long as the distinctions have a rational basis. But distinctions among types of noncommercial speech are likely to be invalidated unless supported by a very strong governmental justification.

Another extremely important rule emanating from the *Metromedia* decision relates to the comparative effect of a billboard regulation on commercial signs and noncommercial signs. The ordinance that was the subject of the *Metromedia* decision prohibited all off-premise commercial signs, but allowed on-premise commercial signs. Certain narrow categories of noncommercial signs were exempt from the ordinance, as discussed above. In general, however, the effect of the ordinance was to favor commercial over noncommercial expression because on-premise commercial signs were allowed but an on-premise sign containing a nonexempt, noncommercial message would be prohibited. The court held that this reversed the priority of protection mandated by the constitution which has been held to afford the greatest protection to noncommercial (usually political or religious) expression, and only a lesser degree to commercial expression. To avoid this unconstitutional reversal of priorities an ordinance can allow noncommercial speech in any forum and under at least equal conditions as commercial speech. An ordinance does not violate the constitutionally mandated hierarchy if it contains a statement that the ordinance does not apply to noncommercial signs, or that any sign allowed under the ordinance may display noncommercial in lieu of commercial messages.

Constitutional Issues: Takings

The major unsettled area of law relating to billboard regulations arises out of the constitutional requirement that property may not be taken for governmental purposes without just compensation. Regulations that substantially interfere with private property rights have been held to effect a regulatory taking, that is, a taking without the formal exercise of the condemnation power, and are unconstitutional if compensation is not paid to the affected property owner. Takings claims increasingly have become a basis for challenging local land use regulations that fail to strike the balance, discussed above, between regulatory goals and individual property rights. A takings claim is very difficult to establish because it requires a showing that all or nearly all use of the property is restricted by the challenged regulation. No reported North Carolina case has ever held (and withstood appeal) that a local regulation effected a taking. Several recent federal court cases arising out of North Carolina have refused to dismiss takings claims asserted against local billboard ordinances, and the outcome of those cases, which are still pending, is uncertain. The takings analysis applied in those cases is important to review and follow as much as possible in developing future billboard and other local regulations.

The courts have developed a descriptive test for determining when a law effects a regulatory taking. In North Carolina, the "law of the land" clause contained in Article I, Section 19 of the state constitution (the state equivalent of the federal takings clause) has been interpreted by the courts to require that a regulation must be reasonably related to a legitimate public purpose and may not completely deprive property owners of the beneficial use of their property. Stated another way, a regulation effects a taking if it deprives the owner of all practical use of property and the property is rendered of no reasonable value. The United States Supreme Court has articulated the standard for purposes of federal constitutional takings analysis by stating that an ordinance effects a taking if it does not substantially advance a legitimate public purpose or if it denies an owner economically viable use of his land. The federal and state standards are viewed to be substantially the same.

Sign regulations often do not distinguish between on-premise and off-premise signs. An on-premise sign (shown at left) advertises a business or activity located on the same lot or parcel as the sign.

The first element of the takings standard is essentially an ends-means analysis. The issue is whether the means chosen are reasonably necessary to accomplish the stated purpose of the regulation. The second part of the test focuses on the interference with property rights, in determining whether that interference is reasonable in degree. Obviously, these judicial tests are not susceptible to formulaic application, but must be applied and evaluated on a case-by-case basis. Although the tests, as applied in previous cases, give some guidance, it is often difficult to know when an ordinance will be ruled to have gone too far in interfering with property rights so as to effect an unconstitutional taking.

In 1987, the United States Supreme Court handed down several important takings cases.[10] The case most relevant to billboard regulations is *Keystone Bituminous Coal Association v. DeBenedictus*.[11] In that case the Court revisited the state of Pennsylvania's efforts to restrict the amount of coal removed from heavily mined areas in order to prevent subsidence of the surface land estate. A 1922 Supreme Court decision striking down a similar law was the first case to establish the regulatory taking doctrine.[12] The *Keystone* court upheld the modern law, which had undoubtedly been carefully researched, supported and drafted to avoid the pitfalls that led to the invalidation of the earlier law. The *Keystone* opinion reemphasizes two significant elements of takings law. The first element is that the takings analysis is a balancing test. Thus a strong public purpose may justify a more intrusive regulation than will a less compelling purpose. The second element is that to satisfy the second prong of the takings test, a property owner must demonstrate that the challenged regulation causes a deprivation of aggregate property rights, not just a decrease in profits that may be gained from use of the property, and not just the complete elimination of isolated segments of property.

Neither *Keystone* nor the other recent takings cases decided by the Supreme Court changed the substance of the takings analysis. Nonetheless, they seem to have inspired a move toward a more thorough evaluation of takings claims. This shift in judicial attitude can be seen in the billboard cases now pending in the North Carolina federal district courts.

In 1986, the Fourth Circuit Court of Appeals upheld a Raleigh sign ordinance against, among others, a takings challenge. The ordinance limited the size and location of billboards and required that billboards not brought into conformity with the ordinance within five and one-half years must be removed. On a summary judgment motion, a motion filed before trial, the court held that there was no evidence in the record demonstrating that the ordinance deprived the plaintiff billboard company of all use of its property. The five and one-half year period, called an *amortization* provision, was held to be a reasonable means of allowing the property owner to recover some of the investment in the signs prior to removal.[13] Amortization provisions are used in other land use regulations and have been sanctioned by the courts as a way of decreasing the impact of regulations on affected property owners, and as a way of achieving the necessary balance more equitably than if the regulation were to take immediate effect.[14]

Unlike other land use regulations, sign regulations affect communication that is protected by the state and federal constitutions. In reviewing sign ordinances, courts look at the effect of the ordinance on non-commercial (sign at top) as well as commercial speech (sign at bottom).

The cities of Durham and Waynesville adopted ordinances banning all off-premise signs and providing five and one-half year and four-year amortization periods, respectively. Both ordinances have been challenged, and both cases have been appealed to the Fourth Circuit Court of Appeals and have been remanded to the lower court for additional evidentiary proceedings. In the Durham case, the lower court, like the court in the Raleigh case, had decided in favor of the city on a summary judgment motion. The Waynesville ordinance was held to be invalid on a summary judgment motion. Both cases were remanded by the appellate court with specific instructions to determine, by thorough evaluation of the evidence, the impact of the respective ordinances on the claimants' property.[15]

Although the standard for what constitutes a taking has not changed since the decision in the Raleigh case and the decisions in the Durham and Waynesville cases, it appears that the court's approach to these cases has changed somewhat, perhaps shifting a burden to the local government to show that an ordinance is reasonable, rather than relying solely on the ability or failure of the claimant to come forward with evidence of a taking. The Durham court of appeals decision states that, "Recent cases decided by the Supreme Court raise questions about the propriety of summary judgment of takings claims without a fully developed factual record."[16] In other words, the court cannot decide if an ordinance goes too far without detailed evidence as to how far the ordinance goes.

The Court of Appeals has given specific instructions to the lower courts in the Durham and Waynesville cases on the facts to be reviewed in determining the impact of the challenged ordinances on the claimants' property. The laundry list reads as follows:

> The court should make findings pertaining to every aspect of [the claimant's] business that will be affected by the ordinance, including the number of billboards that can be economically used for noncommercial advertising, the number that are economically useless, the terms of [the claimant's] leases for billboard locations, the land [the claimant] owns for locations and whether it has any other economic use, the cost of billboards that cannot be used, the depreciation taken on these billboards and their actual life expectancy, the income expected during the grace period, the salvage value of billboards that cannot be used, the loss of sharing revenue, the percentage of affected signs compared to the remaining signs in [the claimant's] business unit, the relative value of affected and remaining signs, whether the amortization period is reasonable, and any other evidence presented by the parties that the court deems relevant.[17]

Motions on various legal issues are currently pending in both of these cases.

Perhaps the most unsettled and difficult issue raised in the Durham case is one that must be resolved before any of the factual inquiries listed above can take place. The court must first identify the appropriate unit of property to which the takings analysis is to be applied. The plaintiff billboard company argued that the appropriate unit of property is each individual billboard that must be removed under the ordinance. The court rejected this argument, stating that, as with the pillars of coal in the *Keystone* case, property rights are not viewed in segments for purposes of takings analysis. Instead, the court appears to suggest that the claimant's business or aggregate sign holdings in the area covered by the ordinance is the appropriate focus of the inquiry. Thus the parties may also have to present evidence relating to the particular corporate structure and marketing practices of the claimant in order to characterize a property interest that is entitled to constitutional protection.

Although the outcome of these and other pending billboard cases cannot be predicted, the factual disputes and legal issues being argued in these cases should be closely monitored by planners, drafters, and policy-makers considering billboard regulations. Settled issues and ordinances upheld in earlier cases can be used as guideposts in identifying provisions and regulatory schemes that are likely to be upheld if challenged. In each case, however, ordinance provisions and stated purposes must be tailored to the conditions existing in the regulating community. Despite numerous unsettled issues in applying the takings analysis, the clear message of the recent billboard cases is that takings analysis requires a detailed factual inquiry. Local governments are well advised to perform as much of this inquiry as possible and evaluate the potential impact of the ordinance within the community during the period before adoption of billboard regulations, rather than to risk having to develop the record for purposes of litigation. □

Notes

1. See, Schloss v. Jamison, 262 N.C. 108, 136 S.E.2d 691 (1964).
2. 453 U.S. 490 (1981).
3. See, Georgia Outdoor Advertising, Inc. v. Waynesville, 833 F.2d 43, 46 (4th Cir. 1987); State v. Jones, 305 N.C. 520, 290 S.E.2d 675 (1982) (junkyards); A-S-P Associates v. City of Raleigh, 298 N.C. 207, 258 S.E.2d 444 (1979) (historic preservation).
4. N.C.G.S. §153A-121.
5. Summey v. Henderson County, 96 N.C. App. 533, 386 S.E.2d 439 (1989), cert. denied, 326 N.C. 486, 392 S.E.2d 101 (1990).
6. N.C.G.S. §136-126 et seq.
7. For an in-depth discussion of the federal and state sign control programs, see R. Ducker, "Federal and State Programs to Control Signs and Outdoor Advertising," in *Popular Government,* Spring 1987, pp. 28-42.
8. An off-premise sign is one that does not advertise a business or activity located on the same lot or parcel as the sign.
9. 453 U.S. at 514.
10. First English Evangelical Lutheran Church v. County of Los Angeles, 482 U.S. 304 (1987) (held that the violation of the takings clause requires compensation, invalidation of the ordinance effecting the taking is insufficient); Nollan v. California Coastal Commission, 483 U.S. 825 (1987) (condition on permit requiring dedication of easement for public access constituted unconstitutional exaction); Hodel v. Irving, 481 U.S. 704 (1987) (statute escheating fractional interest in Indian allotments constituted unconstitutional taking of interests without compensation).
11. 480 U.S. 470 (1987).
12. Pennsylvania Coal Co. v. Mahon, 260 U.S. 393 (1922).
13. Major Media of the Southeast v. City of Raleigh, 792 F.2d 1269 (4th Cir. 1986), cert. denied, 479 U.S. 1102 (1987).
14. See, State v. Joyner, 286 N.C. 366, 211 S.E.2d 320, appeal dismissed, 42 U.S. 1002, 95 S.Ct. 2618, 45 L.Ed.2d 666 (1975) (three-year amortization period for removal of junkyard); Cumberland County v. Eastern Federal Corp., supra, (three-year amortization period for billboard removal); R.O. Givens Company, Inc. v. Town of Nags Head, 58 N.C. App. 697, 294 S.E.2d 388, cert. denied, 307 N.C. 127, 297 S.E.2d 400 (1982) (five and one-half year amortization for billboard removal).
15. Naegele v. City of Durham, 844 F.2d 172 (1988); Georgia Outdoor Advertising v. City of Waynesville, 900 F.2d 783 (1990).
16. 844 F.2d at 175.
17. 844 F.2d at 178.

From Walk-A-Thons to Congressional Hearings: Rural Transportation Services Come of Age

Connie Garber

In the late 1960s, in rural York County, Maine, one of the first walk-a-thons was organized with the theme: *The children will walk so the elders may ride.* This event raised $33,000, and the first van was purchased to provide transportation to some of York County's senior citizens.

This scene, with variations on the theme, was repeated in the 1970s in countless other communities across the country, predominantly focusing on the need of elders to access medical care, shopping, and hot meal programs. The Councils on Aging and Senior Centers, serving as advocates for the elderly, set a high priority on access to services. They understood that without a means to move people from point A to point B, the best services were of no use to these potential consumers. Following the example set by advocates for senior citizens, groups such as Associations for Retarded Citizens, United Cerebral Palsy, and the Red Cross became involved with the provision of local transportation for their client groups.

On the federal level, the growth of transportation services was fueled by the expanding array of programs serving health and human service needs. The Health Care Finance Administration (whose programs include Medicaid), Head Start, the Administration on Aging, and many other bureaus in the federal government became involved directly or peripherally in the funding of transportation for specific segments of the population. In 1978, the Urban Mass Transportation Act took on a new dimension when Section 18 was added to the original Act. Section 18 provided funding for capital and operating costs of non-urbanized public transportation. The establishment of rural transportation funding had been preceded by the Section 147 demonstration projects. These projects had so clearly proven the need for additional rural transportation resources that no full-scale evaluation was needed to substantiate their success.

Why was there such a need? What were the circumstances in this country that precipitated the growth of transportation services, not only in the large urban areas, but in smaller cities and rural regions? We have only to look at how people lived, their means of livelihood, the family structure, the advancements in health care, and the regionalization of services to answer these questions.

A Changing Society

As the economic base of this country changed and people moved closer to jobs, the nuclear family began spreading geographically. As people began to live longer and those with disabilities gained greater independence, the traditional extended family was not always there to assist. As the milkman stopped coming to the door and the doctor stopped making house calls, people had to travel farther to get the goods and services they needed. The needs of these individuals were by no means ignored; instead of a daughter taking her elderly parent to the doctor, or a physically handicapped child staying home (or being institutionalized), a growing network of non-profit agencies began to fill the void.

For instance, the one-van system that began with a walk-a-thon in rural Maine has grown to thirteen bus routes operating five days a week, with over twenty funding sources contributing to a consolidated regional transportation service. York County Community Action Corporation's (YCCAC) service is an example of what has happened nationwide. YCCAC's Transportation Program covers the county's twenty-nine towns--one thousand square miles--and provides rides

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to targeted persons such as the elderly, physically handicapped, mentally retarded, and low-income individuals, as well as the general public. As YCCAC's transportation service has grown, with service provided on YCCAC's buses, in private cars using volunteer drivers, and with sub-contracts to taxicabs and private bus lines, the need for service has grown faster. Even so, YCCAC and other "community transportation" providers have attempted to continue doing more with scarcer resources.

Growing Pains

The growth of community transportation has brought a new set of challenges (the new term for problems). The fragmented system created when small groups provided transportation targeted at their specific client population, exacerbated by the dozens of targeted funding programs at the federal level, has led to a less than perfect outcome. In urban and rural areas alike, there can be found varying levels of coordination in community transportation services. In some areas, services are fully coordinated, while in other areas there are totally independent, multiple providers, characterized by many gaps in service.

"The fragmented system created when small groups provided transportation targeted at their specific client population, exacerbated by the dozens of targeted funding programs at the federal level, has led to a less than perfect outcome."

On the lower end of the coordination range, Van A travels down a rural road picking up pre-school children going to Head Start. Van B follows five minutes later picking up a mentally retarded individual headed for a sheltered workshop, followed a half-hour later by Van C collecting senior citizens going to a meal program. Not only are vehicles underutilized, but the administrators of programs A, B, and C often do not have the time or know-how to maintain the vehicles, nor the money to replace them. Vehicle operation and maintenance steals much-needed time from program administrators (who must hire and fire drivers, deal with vehicle breakdowns, work out insurance coverage, etc.), and also steals much-needed funding from the organization, whose primary purpose is to provide a service, not transportation.

The need for more transportation service has led to a national, state, and regional focus on the question of how to maximize existing resources to serve more people. This has led to the use of a full range of coordination options. For instance, in some states (such as Florida, North Carolina and Maine), the state mandates a level of regional planning or the combination of funds. In some regions, groups of special purpose agencies have set up centralized dispatching, maintenance, or bulk purchasing of fuel.

In addition to the need to provide more effective and efficient transportation services, the importance of providing safe transportation has been recognized. It can no longer be deemed adequate to get a person from point A to point B; there must be some assurance that the vehicle has been designed with rider safety in mind, and maintained appropriately to minimize road hazards. The driver must also be trained to deal with the many demands of the job: special needs passengers, emergencies, defensive driving, and public relations.

Strides Made in the 1980s

How are these things being accomplished? Great strides have been taken in the last three to five years. During this period, rural and specialized transportation operators formed the National Association for Transportation Alternatives (NASTA) and got the ear of key individuals, such as Congressman James Oberstar from Minnesota. Initial congressional hearings on rural transportation needs for training and technical assistance laid the groundwork for the UMTA Rural Transit Assistance Program (RTAP), which now includes both national and state programs to meet a variety of training needs.

At the national level, a series of training modules have been developed, dealing with topics such as meeting the needs of special passengers, emergency procedures, dispatching, and board training. A national clearinghouse for information, with a toll-free hot line, has been set up, and a peer-to-peer network of professionals in the field is able to offer assistance to fellow providers on a variety of topics. The clearinghouse and the peer network are being operated under contract by the Community Transportation Association of America (CTAA), a national professional organization formed in June 1989 through the merger of NASTA and Rural America, a rural advocacy organization. Operators of rural and specialized transportation continue to play a critical role in the national RTAP effort, serving on the review board (which provides direction for the development of the modules, reviewing and giving technical input, and helping to coordinate the variety of training efforts underway at UMTA), and forming the "talent" for TransNet, the peer-to-peer network.

The bulk of the RTAP funds (85 percent) are distributed on a formula basis to the states, where local training and technical assistance needs can be prioritized and addressed. An incredible assortment of training workshops, conferences, scholarships for travel to training sessions, "roadeos", community transportation marketing, and many other services have become available through RTAP. The importance of RTAP in providing local operators with access to training cannot be overemphasized, yet in most states this access has

been limited (by funding constraints) to those transportation providers receiving UMTA Section 18 or Section 16(b)2 funds.

Only within the last year have additional monies become available, through the combined auspices of UMTA and the U.S. Department of Health and Human Services (HHS), to expand training and technical assistance to the vast number of human service agencies, funded by HHS, who provide transportation either as a primary or peripheral service. In February and March of this year, the Community Transportation Association of America convened two regional conferences on "Integrated Client Transportation," cosponsored by UMTA and HHS. These conferences represented the first effort to bring human service agencies into the network created by RTAP, and provided a forum for the agencies to voice their concerns on barriers to coordination and make suggestions for resolution to these issues.

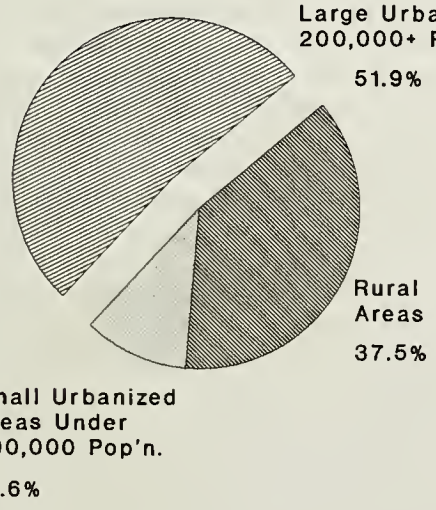
At the regional conferences, it was easy to see the need for the expansion of training services. There was a thirst for communicating with peers at coffee breaks, during workshops, and at meals, and a hunger for written information as every hot line brochure, copy of *Community Transportation Reporter* magazine, and all other resource materials were snatched up. In all cases, the characteristics that set this group of community transportation operators and human service agencies apart from the large urban mass transportation providers is an historical lack of national focus, inadequate funding, and insensitive regulation.

For too long, this country has paid only lip service to the needs of its citizens outside the large urban areas. When almost half the U.S. population resides in small urban and rural areas, with 50 percent of those non-urbanized counties receiving no public transportation funds, and only 3.4 percent of formula funds from UMTA going to rural areas (see Figure 1), there are obvious inequities that need attention. When elderly women and men ride rural transit services in numbers three times their proportional share of the population (see Figure 2), and yet the lack of transportation is ranked at state and national aging conferences as one of the largest problems, there are undeniable funding issues that need resolution.

Proposed Federal Legislation

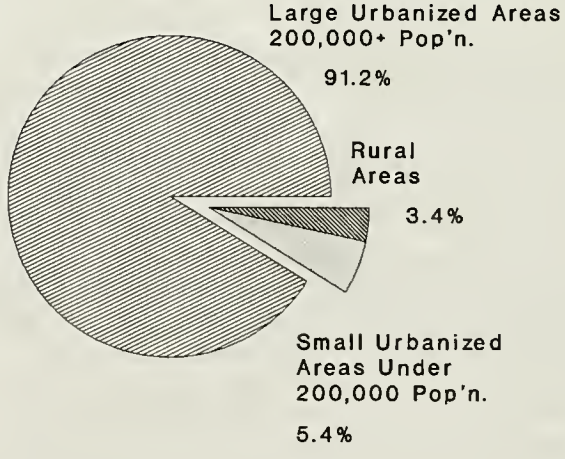
There is an important opportunity this year with the reauthorization of two critical pieces of legislation before the Congress: the Urban Mass Transportation Act, and the Older Americans Act. At a recent hearing held by the House Select Committee on Aging, Subcommittee on Human Services, a number of statements were made in formal testimony which underscored the need to focus on the geographic and funding inequities currently existing. Senator Brock Adams of Washington stated that ". . . in 1978, as Secretary of Transportation, I issued a policy paper entitled 'Transportation Policy for a Changing America,' which stated: 'We have come to recognize personal mobility as vital to the quality of life for all people at all income levels and to the transporta-

Figure 1



1988 Population Percentages

Statistical Abstract of the U.S., 1990



UMTA Assistance, FY'90

UMTA Statistical Summary, FY'89

Figure 2

Relative Ridership of Rural Transit

tion disadvantaged--the disabled, the elderly and the young. Equity has become an important principle of transportation policy.'"

On February 21, 1991, Congressman Nick Rayhall of West Virginia introduced the Mobility Assistance Act of 1991, H.R. 1079, and listed the major focuses of the bill:

1. To increase the balance of funding between rural and small urban areas (to 7.5 and 10 percent respectively) and large urban areas.
2. To target the transportation dependent as priority users of the services, particularly in light of last year's passage of the Americans with Disabilities Act (ADA).
3. To reverse the trend towards rural isolation exacerbated by deregulation of airline, passenger rail, and intercity bus services, with the resulting loss of service to over 4,000 rural communities.

A summary of the major provision for the Mobility Assistance Act of 1991 states:

> The Mobility Assistance Act of 1991 is designed to restore funding for public transportation to a level more in keeping with the economic, social and environmental importance of these programs, to allocate a significant portion of the increased funding toward meeting new and previously unmet mobility needs, and to renew the level of federal support in planning, research, and technical assistance as well as in financial aid. In keeping with the recognition that public transportation programs are important to all Americans in all areas, it changes the name of the Urban Mass Transportation Administration (UMTA) to the Federal Public Transportation Administration (FPTA).

Bringing these sweeping phrases and proposed major shifts in national policy down to the human level, there is an opportunity in 1991 and the years ahead to make a positive change in the lives of people all over our country:

- The elderly man looking for someone to drive him three times a week for kidney dialysis.
- The elderly woman who can only get out of her house one day a week for the couple of hours a bus is available in her town of 1,500.
- The physically handicapped and mentally retarded women and men trained to work who cannot get to potential job sites.
- The low-income and "working poor" families who cannot afford the luxury of more than one car (or any car in many instances), leaving children and one parent isolated, without access to services taken for granted in larger urban areas.

Conclusion

The Community Transportation Association of America urges all people to become advocates for mobility--the "missing link" in the chain of consumer services, goods and employment. Become involved, learn what community transportation services are provided in your county and state, and become a proponent for equity, accessible services, and a pro-active national policy on mobility for all citizens. State associations must help to focus state attention on these issues, as well as forming coalitions to impress upon all elected officials--local, state and federal--the importance and timeliness of the issue of mobility.

The energy that began a walk-a-thon over 20 years ago has not diminished; if anything, it has grown and multiplied. Contact the RTAP Hotline (1-800-527-8279) if you need the name of contacts in your state, or want additional information on what you can do, as an individual or part of a group, to forward the cause of mobility. It is time to allow all people to be as economically productive, physically independent, and happy in their lives as they are capable. Mobility is the critical means to that end. And as the lives of neighbors, friends, and families improve, each individual community and our national community will also improve. □

Where to Draw the Line: Using GIS to Incorporate Environmental Data in Highway Placement Decisions

Sarah Burdick

One of the most difficult responsibilities of local elected officials is the approval of a thoroughfare plan for an urban area. A thoroughfare plan is a comprehensive, long-range (ten- to twenty-year) plan for highway improvements, and thus has enduring and far-reaching policy implications. When considering a thoroughfare plan, elected officials are often concerned because they cannot look at a proposed thoroughfare, represented by a line on a map, and assess the magnitude of environmental and social consequences of the route. As a result, some crucial facilities might be left off the thoroughfare plan completely, rather than risk these unknown consequences.

The decision of whether to include a proposed road on a thoroughfare plan will always be difficult. However, technology is available that can help decision makers determine that a line on a map is indeed the most appropriate location for a thoroughfare. In recent years, transportation professionals and elected officials have begun to use geographic information systems (GIS) to visualize the environmental and social impacts of a corridor and to enhance their ability to choose the best route.

Thoroughfare Planning

Comprehensive transportation planning for urban areas became mandatory with the Federal Aid Highway Act of 1962. This act requires that urban areas have in place a continuing, cooperative, and comprehensive planning process (the 3-C process) among jurisdictions. Areas which do not have the 3-C process in place are not eligible for federal highway aid. A comprehensive plan to serve present and anticipated transportation needs is also required by North Carolina law (N.C. General Statutes §136-66.2).

The 3-C process and state regulations call for an approved thoroughfare plan that encompasses all of the local jurisdictions within an urban area. Census information is used to determine the jurisdictions that make up an urban area for thoroughfare planning purposes. For example, 1980 census data was used to define Durham-Chapel Hill-Carrboro as an urban area for the first time.

The North Carolina Department of Transportation defines thoroughfare planning in the following manner:

> Thoroughfare planning is a process public officials use to assure the development of the most appropriate street system that will meet existing and projected travel desires within the urban area.[1]

The word *appropriate* in the above definition refers not only to types of facilities--such as a two-lane road with bike lanes, or a divided highway--but also to the location of these facilities. Factors such as current travel patterns and safety considerations are used to determine the need for new transportation corridors.

A thoroughfare plan is used to reserve land for future projects. The plan helps guide future land use because it is a public document that citizens and developers use to choose locations for homes and businesses. The thoroughfare plan also serves as a guide to local elected officials, who have the authority to make requirements of developers in critical transportation corridors. For example, the plan is often used to indicate where developers should dedicate or reserve the right-of-way for a future road. This practice reduces public expenditures, and can result in less disruption of established neighborhoods, less degradation of the natural environment, and more control of the urban land use pattern.

If an urban area does not have a thoroughfare plan, new roads are ineligible for federal money, which may make the funding of new roads impossible. Without this funding,

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communities will have to live with the consequences of no new roads, such as intolerable traffic congestion, decline in the quality of life, economic losses, and negative effects on the environment.

A thoroughfare plan is not a static document. If a community becomes less dependent on cars over the next ten to twenty years, and the proposed roads are not needed, implementation of the plan can be deferred or suspended. If a community is opposed to new roads, however, the wisest approach is to approve a thoroughfare plan to assure federal support, to protect rights-of-way, and to guide development, and then to work at changing the dependency on cars to make the plan unnecessary.

In some communities, elected officials worry that the political repercussions of having no new roads are fewer than the approval of a new corridor that might destroy the integrity of natural areas and disrupt the lives of affected citizens. This has been the case in the Durham-Chapel Hill-Carrboro urban area, where the thoroughfare plan is in the adoption stage. Many facilities have been dropped from the original proposal, and there is a chance that a plan will not be adopted because some elected officials feel uncomfortable about approving future corridors without more information on the potential environmental effects of these roads.

At a work session held to review the proposed Durham-Chapel Hill-Carrboro thoroughfare plan, an elected official asked a North Carolina Department of Transportation staff person if it were possible to do an Environmental Impact Statement (EIS) on a potential corridor before the thoroughfare plan was approved. Currently, an EIS is done as part of the project planning process--not the long-range planning process--and then only if the Environmental Review warrants it. While many environmental and social factors are weighed in the current long-range planning process, neither an Environmental Review nor an EIS is done at this stage. An EIS is extremely time consuming and costly. It would be ideal to prepare an EIS for every potential corridor, but the costs are prohibitive.

While the preparation of an EIS is not a prudent use of tax dollars at the thoroughfare planning stage, the previously mentioned elected official expressed a legitimate concern. It would be easier for elected officials to accept and approve a thoroughfare plan if they were more certain that each proposed corridor avoids environmentally sensitive areas. The elected official was really asking for vital environmental information that could be used to compare alternatives and determine the best place to draw a line on the map. Currently, environmental information is included in the EIS, which is done only after a project is funded.

Ian McHarg's Approach

A different approach to corridor selection could have provided the information sought by the elected official. In the late 1960s Ian McHarg developed the *overlay technique*, which allows numerous social and environmental factors to be considered when determining the location for a facility. McHarg used the overlay technique for many suitability studies, including an evaluation of a proposed site for an interstate highway in New Jersey. As justification for use of his methodology, McHarg asserts:

> The highway is no longer considered only in terms of automotive movement within its right-of-way, but in context of the physical, biological and social processes within its area of influence. The best route is the one that provides the maximum social benefit at the least social cost.[2]

Conventionally, transportation planners and engineers only consider the physical factors that go into road construction, such as slope, soil type, and water bodies, because that information is readily available and can be assigned dollar values. In order to find the route with the maximum social benefit, McHarg considered not only benefits and costs that could be measured in dollars, but also benefits and costs associated with social values, such as historic, recreational, and scenic values.

> ***"In order to find the route with the maximum social benefit, Ian McHarg considered not only benefits and costs that could be measured in dollars, but also benefits and costs associated with social values, such as historic, recreational, and scenic values."***

McHarg used his overlay technique on numerous development proposals. Most famous are his plan for controlled growth northwest of Baltimore, the so-called "Plan for the Valleys," and his ecological plumbing plan for the Woodlands, a new town on the Texas coastal plain. McHarg first used the overlay technique for portions of Interstate 95 between the Delaware River and the Raritan River in New Jersey, and on the Richmond Parkway in New York. Before McHarg began his study, the Richmond Parkway was scheduled to transect a greenbelt. In an article describing his process, McHarg emphasizes:

> The highway is considered a major public investment that will transform land uses and values and that will affect the economy, the way of life, health and visual experience of the entire population within its sphere of influence.[3]

The physiographic factors he used were slope, bedrock geology, soil foundation conditions, and susceptibility to erosion. These factors were directly related to the cost of construction. The social values he used were historic impacts, water impacts, forest impacts, wildlife impacts, scenic impacts, recreation impacts, residential values, institutional values, and land values.

For each of these factors, McHarg made a transparent map. The transparent maps were then used to make two

summary maps, one for physiographic factors and the other for social values. When the two summary maps were overlaid, the lightest tone indicated the best location--that is, the least social cost corridor. McHarg then overlaid existing buildings on the lightest areas and recommended two routes that would avoid the buildings while staying within the corridor. As a result, the proposal to sever the greenbelt was rejected, and McHarg's proposal was adopted.

Although McHarg's method for locating a highway is superior to other methods (such as cost-benefit analysis), there are sound reasons why transportation planners have not adopted the overlay technique. In the method used by McHarg, overlays are produced manually, which is very time consuming. It is difficult to get the overlays to match up accurately. Once produced, the overlays cannot be easily changed and manipulated to answer "what if" questions. Also, transportation planners do not have the expertise or manpower to maintain all the information required to create the overlays. With the technology now available in the form of geographic information systems (GIS), however, transportation planners are beginning to use McHarg's twenty-year-old method to determine the most appropriate location for future thoroughfares.

N.C. Agencies Initiate a Pilot Project Using GIS

North Carolina has embarked on a $9 billion highway building program to be completed over the next thirteen to eighteen years. This represents an increase of 300 to 400 percent in the number of projects annually. Recognizing the potential for problems, both from direct environmental impacts and in the review and permitting process, a joint agreement was signed between the Department of Transportation (DOT), the Department of Environment, Health and Natural Resources (DEHNR), and the Department of Cultural Resources (DCR).

In essence, the state has embraced the use of the methods first advocated by Ian McHarg. The fruit of the joint agreement is a pilot project utilizing GIS to do broad-scale environmental evaluation of two actual transportation projects. The pilot project proved exceptionally useful for early corridor placement with maximum avoidance of environmentally sensitive areas. In both projects, alternative routes were examined because of the findings. The Department of Transportation is currently considering a proposal to build a statewide transportation planning database based on the results of the pilot project.

In a pilot project using geographic information systems, the North Carolina Department of Transportation is able to consider the environmental impacts of a bypass to be constructed around the town of Ahoskie.

It was necessary for DOT to enter into a joint agreement with DEHNR and DCR because those agencies house much of the data DOT needs to create overlays for highway siting. For the pilot project, the three agencies agreed to maintain, update, and share overlays in order to create a common database. This ability to accommodate a common database is one of the greatest advantages of GIS. A common database promotes cooperation among the agencies, and is efficient and cost-effective because work is not duplicated.

With the other agencies' information available in digital form, DOT is able to consider environmental impacts up-front instead of after a project is funded. One project that was used in the pilot program was a bypass around the town of Ahoskie, located in Hertford County. This project included 11.2 miles of multi-lane highway, with construction slated for 1996. The three agencies worked together to determine the data to be used in siting the bypass. The following data was chosen because of its availability, ease of acquisition, and importance to highway environmental evaluation:

Archaeological Sites	Natural Heritage Inventory
Detailed Soils	Non-Discharge Permits
Flood Zones	Parcel Boundaries
Groundwater Incidents	Point Source Dischargers
Hazardous Waste Facilities	Recreation Projects
Historic Sites	Solid Waste Facilities
Hydrography	Superfund Sites
Land Cover	Surface Water Intakes
Land Use	Transportation
Natural Areas	Wetlands and Deep Water Habitats

Each of the above coverages was plotted on clear acetate, just as McHarg would have done. This provided a "quick and dirty" look at the location of the most suitable corridors. From these individual overlays, GIS was used to compile a map showing the least and most environmentally sensitive areas. DOT then wrote a program to provide attribute information for specific corridors in the form of text and tables. This output inventoried the number of features, such as historic sites and acres of wetlands, that are located within specified corridors, while the maps showed where the features are located.

Since the Ahoskie bypass was already included in the state Transportation Improvement Program (TIP), a line had already been drawn on the map prior to GIS analysis. Therefore, DOT engineers were able to compare impacts, such as loss of agricultural land and historic sites, with alternate corridors. GIS allowed transportation planners to make these comparisons easily and quickly, and also allowed the planners to change the width of the corridor and create a buffer around the corridor. The creation of a buffer allows GIS to determine various impacts, such as noise, on the land immediately surrounding a highway.

The North Carolina Department of Transportation has been aggressively seeking ways to incorporate environmental data at an early stage in the project planning process and is a national leader in using GIS to accomplish this goal. In a society with an increasing sensitivity to the environment, the use of GIS allows DOT to better address environmental concerns. In a time of tightened budgets, maintaining the necessary information in a shared database reduces costs. In addition to the pilot project mentioned previously, DOT and DEHNR are currently involved with the Federal Highway Administration (FHWA) in three pilot projects using environmental review at the thoroughfare planning stage to aid in the preservation of future highway corridors.

Conclusion

The use of environmental data is essential for determining the most suitable placement of highway corridors. With the capability of comparing the environmental impacts of corridors, GIS can give elected officials more time to address the political and emotional aspects of a decision. The ability to compare corridors will also lead to the early elimination of unsuitable corridors, saving time and money.

GIS can in some ways ease the responsibilities elected officials have in approving a thoroughfare plan, but it is not the solution to the problems and controversy the plan faces during the approval process. Elected officials will still have to deal with public sentiment that is often opposed to road building, and the decision of whether to include a thoroughfare on the plan will still remain a difficult one. It is the responsibility of elected officials to weigh the costs and benefits of including a road on the plan. What GIS can do is to allow the costs of alternative corridors to be compared.

Elected officials will never be able to get a full-fledged EIS upon request when approving a thoroughfare plan. However, GIS will allow elected officials to see all the different elements that went into a decision on where to draw a line on a map, and they will be able to get answers to many of their "what if" questions. GIS analysis of corridor selection will give elected officials the information they need to be confident that the line drawn on the map is indeed the most appropriate. □

Acknowledgments

The author wishes to express special thanks to David B. Foster, director of Highway Environmental Evaluation, N.C. Department of Environment, Health and Natural Resources, and Ed Shuller, chairman of the GIS Implementation Committee, N.C. Department of Transportation, for their comments on an earlier draft of this article and their willingness to provide information on the pilot project described in the article.

Notes

1. Report #3: *Public Comment and Final Recommendations*, Durham-Chapel Hill-Carrboro Urban Area 1985-2010 Transportation Study. Prepared by the Transportation Study Group of the D-CH-C TCC.
2. Ian McHarg, *Design With Nature* (New York: Doubleday & Company/ Natural History Press, 1969), p. 32.
3. Ian McHarg, "Where Should Highways Go?," *Landscape Architecture*, Vol. 57, No.3 (April 1967), p.180.

Departmental Papers

Central American Refugee Planning: Analysis of the Regional Response (with a Special Focus on Costa Rica) and Universal Lessons on Refugee Planning

Julie Locascio

Since the 1970s, two to three million refugees have been displaced from their homes in Central America and have dispersed around the region (not including the even larger number who have migrated to the U.S. or elsewhere). The majority of these refugees are displaced within their own countries. Because of the complexities of Central American politics, refugees from the region have elicited a highly mixed response, ranging from humanitarian to indifferent to hostile. Individuals and agencies trying to serve these refugees or resettle them are faced with a myriad of constraints.

Central American population movements have become extremely voluminous and significant, and continue to pose an unprecedented challenge to economists, relief workers, administrators, politicians, communities, planners and others. This paper describes the history of international refugee-planning, examines the roots of population movements in Central America, surveys the range of regional responses to Central American refugees, analyzes the response to these refugees in the context of international relations and agreements, analyzes the Costa Rican model of refugee planning in detail, makes recommendations for a better response to Central American refugees, and summarizes universal lessons learned about refugee planning.

Tradeoffs and Controversies in the Siting of Wildlife Refuges: A Case Study of the Roanoke River in Eastern North Carolina

Seth McKee

While they may be supported by environmentalists and nature lovers, the establishment of wildlife refuges sometimes causes controversy among residents of surrounding areas. While some support them for economic or environmental reasons, others fear negative economic impacts, restrictions on the use of surrounding land, and decreased land values.

This dynamic was apparent in the recent establishment of federal and state wildlife refuges on the lower Roanoke River in eastern North Carolina. Some local residents supported the refuge idea, citing the need to protect rare wetlands habitat and the tourism benefits that could accrue from their protection. Others were opposed, focusing on landowner and hunters' rights as well as the potential for a stifling of economic development in the area.

This paper focuses on the issues involved in the controversy, both as they were perceived by local residents and as they can be assessed using environmental, land use and economic data on the area. Conclusions are drawn in a "lessons learned" format, in the hope that government agencies and private conservation organizations will take them into account in future efforts at natural areas protection.

Virginia's Chesapeake Bay Preservation Act: Limitations and Recommendations

Rob Wilson

In the 1970s and 1980s, the decreasing water quality and diminishing fish yields of the Chesapeake Bay became an issue of national concern. In response to the declining status of this multi-state resource, efforts have been made to promote the development of regional land use protection measures. Virginia, Maryland, Pennsylvania, the District of Columbia, and the EPA signed the historic 1983 Chesapeake Bay Agreement. The agreement recognized the decline of the Bay's natural resources and set in motion a coordinated regional campaign to improve the Bay's condition. The 1987 Chesapeake Bay Agreement further supported protection of the Bay by addressing water quality, animal and plant life, and the impact of population growth and development.

Virginia's 1988 Chesapeake Bay Preservation Act was one of the efforts to promote regional protection through land use controls. The act calls for a cooperative approach between the state and local governments, leaving the locality with most of the responsibility for implementation. The act established the Chesapeake Bay Local Assistance Board to oversee Virginia's role in the preservation process. The Chesapeake Bay Local Assistance Department was created to assist the board, and to provide financial and technical assistance to localities. The act allows for the board to select designation criteria and performance criteria to help determine lands sensitive to the Bay's water quality, and consequently to protect these areas. The intent of the act is that localities will delineate their respective Chesapeake Bay Preservation Areas and then adopt a local management plan for the protection of these areas.

By reflecting on the endeavors of James City County and the cities of Williamsburg, Hampton, and Newport News, this paper concludes that Virginia's Chesapeake Bay Preservation Act is limited in its effectiveness. Limitations occur as localities are given too much discretion in defining their preservation areas and determining their management programs. Local decisionmaking is impaired by the difficulty of balancing immediate local land use and development concerns against the long-term regional environmental interest. Finally, the Act does not guarantee uniformity of result, thus failing to comprehensively address the Bay's problems.

A Tribute to Floyd McKissick

Floyd B. McKissick, age 69, died April 28 at his home in Durham, North Carolina. McKissick, a lawyer, district judge, and early leader in the civil rights movement, is perhaps best known for his attempt to build a new town, Soul City, in rural Warren County, North Carolina.

McKissick conceived Soul City as a freestanding new town with its own industrial base, government, and residents. It was to be the only American new town of the period that was not near a major metropolitan area. McKissick envisioned that within thirty years the town would grow to have 40,000 to 50,000 residents on 5,000 acres, providing new jobs and opportunities for poor and black rural residents.

An association between Floyd McKissick and the Department of City and Regional Planning (DCRP) began in January 1969. At that time John A. Parker, department chairman, announced that planning faculty would offer special technical assistance to the planners of Soul City. Areas of assistance included town design, site engineering, transportation, land use, housing, community services, and water resources. Additional assistance came from the Rouse Co. and Hammer, Greene, Siler Associates, among others.

In the fall of 1969 a planning studio course, consisting of sixteen students, seven faculty advisors, and numerous other participants, produced a report entitled *The Planning Process for New Town Development: Soul City.* This report was produced in collaboration with Floyd McKissick and other members of McKissick Enterprises, at that time still based in New York City. The report analyzed the economic base, land use, housing, transportation, and utilities for the new town.

Professor David R. Godschalk served as the secretary of the Warren Regional Planning Corporation, the agency guiding the Soul City planning process. He remembers the collaboration between DCRP and McKissick as "a once-in-a-lifetime opportunity to work with a charismatic and courageous man of high ideals and vision, who was totally dedicated to building a new city to help people in need."

Following the release of the studio course report and numerous other efforts, Soul City moved closer to becoming a reality. McKissick relocated to Warren County in the early 1970s, and Harvey Gantt came down from MIT to become the planning director for the town. In July 1972 the federal government pledged up to $14 million in loan guarantees for the new town. Soul City brought Warren County a number of advances, including a regional water supply system, rural health services, and a community recreation center, but due to the mid-70s recession, it was never able to attract the industry or jobs necessary to complete its growth.

Floyd McKissick (fourth from left) at a meeting of Soul City planning staff with faculty from the Department of City and Regional Planning. Faculty members include former department chairman John A. Parker (third from left), the late Robert Mayer (second from left), David R. Godschalk (end of table, left), Edward J. Kaiser (end of table, right), and David Moreau (second from right). Harvey Gantt (fifth from right) was the planning director for Soul City.

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